THE EMPIRE EDUCATIONAL SERIES.

LESSONS IN DOMESTIC ECONOMY

BY

MRS WIGLEY

BOOK I.

T BODY-ITS FOOD AND CLOTHING.

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M. A. Fitz Gerald

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MRS. W. H. WIGLEY.

BOOK I.

THE BODY.—Its Food and Clothing.

LONDON:
JARROLD & SONS, 3, PATERNOSTER BUILDINGS.

Price One Shilling and Sixpence, cloth boards.

21543

This volume contains Part I. of "OUR HOME WORK," *price* 3s., *and is published in this form to meet the requirements of those who wish for Reading Books for advanced Scholars.*

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PREFACE.

THERE have sprung up of late years so many works on Domestic Economy, that it seems to me, I need to offer some little apology for the production of yet another.

The subject of which my little book treats is one which is *only now beginning* to occupy that high place, which should have been awarded to it in all time. Because this is so, it must be a growing subject; a subject to whose worth and wealth, practical experience is continually adding. It is an easy thing to sit down and draw out routines for an imaginary domestic arcadia, in which moral impossibilities are managed with such utter disregard to time and strength, that everyone who tries to do likewise, is either simply disheartened at her own shortcomings, or disgusted with the directions by which she tried to guide herself.

Appetites, old clothing, and dirt, are positives, actual incorrigibles, stubborn not-to-be-salved-over-difficulties, that will not be disposed of for a smile, a touch, or a look.

Every woman, who really works in her own home, knows this well. Home work is a blessed work, a glorious work, and thank God, a woman's work; but it is also *hard work.* Many of those who write and lecture on the subject feel its blessedness and glory in its nobleness, *but they have not felt the hardness.*

Here is my apology then—here is my letter of introduction—my credentials. *I have had to do it all myself.*

I have been placed for years on years, ten miles distant from a town or railway station, with no chance of going shopping for want of shops. I have had a large household to cater for, young children to manage, young girls to train. We have had to feed our own meat, to grow our own vegetables, to cure our own bacon, to make our own bread, butter, cheese, lard, preserves; in short, we have not only had to use the materials, but to prepare such materials for use. And all this too with thrift, carefulness, and management.

Therefore I say my experience is a practical experience; if I can make it of any benefit to my sisters and fellow country-women, surely they shall be welcome to it. And from this feeling springs Home Work.

We all work better with a thorough knowledge of all the *whys and becauses* belonging to the business in hand. So I have tried to give the scientific reason for various necessaries in and about the home. In this effort I have been aided greatly by such works as Dr. Lankester's "Food," and "Practical Physiology;" Professor Johnston's "Chemistry of Common Life;" James Hinton's "Practical Physiology;" Dr. Angus Smith's "Air and Rain;" Dr. Mann's "Guide to the Knowledge of Life," and "Health for the Household;" and I have felt, with such authorities to back me, I am not likely to make any mistake.

One more apology *I must* make. I have headed each chapter with a rhyme, meant to embody the pith of the subject it contained. I can string a few words together and make them twang at the end, to serve a purpose, but I am no poet. Let every one who knows how much more readily such jingles are remembered by the young than sober prose, be kindly merciful to my rhyming.

HOME WORK:

A MANUAL OF DOMESTIC ECONOMY.

Written for the use of all who need to LEARN, *and all who are privileged to* TEACH, *that science.*

PART I.

THE HOME STRENGTH AND SUPPORT.

Food. ITS WORK—VARIOUS KINDS—SOURCES—MACHINERY—PURCHASE—COOKING—EATING, ETC.

Clothing. ITS USE—SOURCES—PURCHASE—FASHION—PREPARATION, ETC.

CHAPTER I.

THE KEY AND THE CROWBAR.

> "Don't make a mistake, don't make a mistake,
> But in going to work the right tools take;
> Who would use oil to put out a fire,
> And then express wonder to see it flame higher?
> Use every gentle means—never use rough,
> Till you prove surely the first not enough;
> Head cool and eye keen—hand quick and steady,
> Whate'er the thing to do—have right tools ready."

WHEN we were little children, a story was either told or read to us, which has never been forgotten. We are going to tell it to you.

The lost key. There was great bustle and confusion at Dorrington Hall; banging doors, hurrying feet, and loud voices. The servants seemed at their wits' end; the butler looked grave and worried; the housekeeper, usually so stately and grand, was certainly flurried and fidgety; and even the squire's lady, sweet and gentle and patient, walked hastily from room to room and from nook to nook in anxious search. The squire had lost the key of his strong box, and it was most important that it should be opened forthwith.

Every little child in the nursery had been questioned, every older child in the school-room had been cross-questioned; from scullery-maid to housekeeper, the female servants had been especially blamed by the squire. "You have swept it up, or dusted it down, or done something with it," he roared; "it must be found."

Now squire Dorrington was a great man in his household; he was large in his person, but he was ever so great in his position. He was lord and master of the house and park, the village beyond, and the farms surrounding the village. Besides this he was J.P., justice of the peace; M.P., member of parliament; and M.H., master of the hounds.

Now in the stables and the kennels the men had given new meanings to these honourable letters, and Jack, the little stable boy, implicitly and innocently believed their definition. To them J.P. was "Jonas Peppery," M.P. "Most Proud," and M.H. "Mighty Hot." Now as this great squire *was* peppery and proud and hot, *we* do not wonder at Jack the stable-boy's faith, and *you* will understand how it was that when this great squire was "*put out*," every one else felt *they* had no business to "*keep in*," and how every one began to scold those beneath them with might and main.

But with all the storm, scolding, and hurry, the key remained a lost key.

The Blacksmith.

"Tell Joseph to saddle a horse and ride to the village for Job Armstrong, the blacksmith; tell him he must come and force the lid open." Instantly Joe saddled the horse, and in a short space of time the required man presented himself.

A fine picture he made, that Job Armstrong; his shirt sleeves were soiled, his leather apron begrimed, and his paper cap begreased; but all this passed unnoticed, as the eye rested on his broad shoulders, brawny bare arms, and great good-tempered face; indeed they seemed just the right outfit for the man of anvil and forge, muscle and sinew. Over his shoulder he carried a ponderous crowbar, in his hand he held iron wedges of various sizes. The squire himself led him to the strong box. "Job, they have lost the key of that box; it contains important papers that my lawyer from London is waiting downstairs to look over—you must force it open."

Job bowed his head. He was one of those who believe that if "discretion is the better part of valour," "silence is the largest half of wisdom."

So he rolled his shirt sleeves higher,
  And settled his cap anew,
And felt the edge of each iron wedge,
  Saying, "I'll try what I can do."
Willing and mighty and earnest,
  And mighty the tools in his hand,
As he tested the locks, on the squire's strong box,
  In the mansion so noble and grand.

Down on his knees went Job, peeping all round the lid, trying to discover some tiny crack, where the thin end of the wedge might be inserted; then he rapped it and tapped it, and tried to raise the lid only the hundredth part of an inch, but it resisted all his effort. All the men-servants were called in to help to heave the lid up, but it was no use, it would not give way an atom.

The crowbar. The squire grew more impatient, and the busy London lawyer grew impatient too. The master fretted and fumed and stamped about, and made himself very uncomfortable. "Can you split the lid, Job?" he asked. Job shook his head; "I can try, sir." And then sharp and loud sounded the blows of that heavy crowbar on that iron-bound lid. Higher Job raised it, faster and louder came the blows; great beads of perspiration stood on his forehead, and trickled down his face, but the lid remained as sound as ever, with scarcely "a dent" to mark the place where the crowbar had fallen. "I am afraid it will beat me, your honour," he said despairingly.

The Locksmith. Just then the soft rustle of a silken dress was heard, and the squire's lady drew near. "My dear, I thought it would be wise to send for Luke Warner, the locksmith; will you let him try his keys?"

A greater contrast to Job could scarcely have been found, this Luke Warner. A little man and thin withal, with a white patient face, and a voice, compared with which Job's seemed as thunder. He had on a black coat and a white apron, and carried a basket of keys slung over his back. With a quiet bow to the squire, he drew near the chest, and briskly and quietly went to work. First he carefully and attentively examined the key-hole, then he tried his keys.

"With a small hand deftly he raised them,
  And as deftly laid them aside,
Some too thick or thin, while those that slipped in,
  Would not turn and his touch defied.
Patient and gentle and earnest,
  His tools just a key and a file,
As he worked at the locks of the squire's strong box,
  And felt sure of success the while."

The key. At last Luke seemed to think he had found the right key; standing up, he handed one to the squire. "Is that anything like the lost key, your honour?" "Yes, Luke, but it won't open the lock, will it?" "I am going to try and make it, your honour."

And the file went to work—a rasp here, a touch there, and then another try in the lock. Over and over again this was repeated, and at length one quick turn of the hand, and the hasp was out, and the lid of the squire's strong box was open. The key had done what the crowbar could not effect.

CHAPTER II.

WOMAN'S WORK.

"Woman's work's her glorious right,
Nought to do with rule and might;
Like the leaven, 'tis I ween,
Raising all—itself unseen."

THE little story told in the preceding chapter has been much in our mind lately. There are a great many locked boxes with lost keys in this world of ours, and it puzzles the wisest heads and the strongest arms to get them open, and very often the managers of the matter make the squire's mistake, they send for a crowbar when they want a key.

Economy. There is a little word on the title page to which we wish to draw your attention—economy. We hear of more than one economy; there is political economy, and social economy, but all of them are alike, in one thing at least, they all have to do with management.

Management. You must understand that *management* means a good deal; you may manage a child till you make him ill, or wicked, or miserable, or hopeless, or idiotic; then you manage badly, and though it may all arise from a mistake, yet the child suffers none the less. Ah! this *management* is the greatest puzzle that ever existed, it is the very strongest locked box that ever needed to be opened as soon as possible, and the worst of it is that so few people agree as to the right sort of tools to be used in the work.

Political and Social Economy. We cannot attempt to describe to you all the mighty implements belonging to the two economies mentioned just now. The Lords and Commons, and all the numerous departments, which have their origin in these great houses, with the inspectors, superintendents, auditors, clerks, and other offices belonging to each; then there are chancellors, judges, magistrates, lawyers, policemen, with prisons and reformatories; mayors, aldermen, and other civic authorities, and all sorts of boards, commissioners, committees, guardians, overseers, and hundreds of others.

And all these are engaged in working out one great end, striving to make the nation a healthy, happy, and prosperous nation, carrying out our political and social economy, managing everything concerning the welfare of the people.

It is a great crow-bar, surely, all this; mighty and good and glorious; and wielded by clever and willing arms, and guided by wise and good heads. But there are great mistakes made often, and the whole affair of management remains a problem unsolved—locked boxes, whose closed lids refuse to admit the various wedges that are tried upon them, and which seem to remain more closely and obstinately shut up after every blow they receive. And yet we are persuaded that there is a little key to every closed box that, if placed in the right hands, and filed and fitted and managed by clever heads, would do more to overcome the difficulty than all the other machinery put together.

Domestic Economy. Look again at the title-page; it tells you that this little work is to treat of *Home Work*, and an "economy" that is neither political nor social—"*The Science of Domestic Economy*." Now every one knows that if economy has something to do with management—domestic has something to do with the home; and to our thinking this economy, this *home* management, is the most important of all.

Supposing *every home* was so managed, that it was a healthy, happy, and prosperous home; then of course the cities and towns made up of those homes, would also be healthy, happy, and prosperous, and the nation which was composed of those towns and cities, would be able to appropriate the same delightful adjectives, and would be healthy, happy, and prosperous too.

Therefore the best way to perfect our political and social economy, is to begin by perfecting our domestic economy, and then the greater part of the work will be done—done in the homes.

Woman's Work. All *home work* is essentially *woman's work*, and we want to make you feel with us, that this work is by far the most important agent for good or evil in all the wide world, that it is the key and not the crowbar, that it can unlock the chest, in which lie concealed the issues of health or sickness, happiness or misery, ruin or prosperity; yea, also of sin or holiness, and of life or death.

Men may legislate and punish, build and improve, think and plan; but unless the *woman's work* is well done, their work remains incomplete, for mismanaged homes can never make a well-managed nation.

Think of this!—the greatest, noblest, and most important work in the world is woman's work. No statesman has power so great, no bishop has office more holy, no chancellor of the exchequer has task more important than that which God placed in the hands of woman.

The knowledge of this should be a woman's greatest glory; to be able to fit herself thoroughly to do all well in her sphere, should be her highest aim—to devote all her ability and energy to the performance of the duties connected with her own high mission should be her one engrossing desire.

Alas! that we should have to own it—this is not the case. It is a shame to every woman amongst us, and to every girl also, who is able to think about the matter, to know that home work—woman's work—*has not been well done.*

She has not cared to study all things pertaining to the health, the happiness, and the prosperity of her home and its inmates. She has worked, but she has worked mechanically, treading in the footsteps of those who preceded her, copying and enlarging upon their blunders and mistakes, and wondering all the while that success does not attend her efforts.

Homes. All round us we meet with homes telling the same painful story, where mismanagement, dirt, disorder, and discomfort reign, in the stead of cleanliness, peace, thrift, and comfort; where home influence has become a myth, and fathers and brothers spend their leisure time and their earnings in other places. Nay more, it has become the fashion for young girls to be proud of their ignorance in those very matters, a perfect knowledge of which should be their greatest glory.

We have heard, over and over again, the daughters of working-men confess, without a blush, "Mother does all those sort of things; *I* have only time for my lessons." So mother does, in some way, the cleaning, the cooking, the mending, the making, and so on, while the ignorant, empty-headed daughter thinks that she adds to her own dignity and grandeur by knowing nothing of her own especial duties, and shirking her work.

Now as *the home* is the proper place for such domestic knowledge to be acquired, and the home *fails to give the lessons*, what is to be done? Our highest *managers*, our social and political economists, feel the importance of the question, and to counteract the evil as far as possible, they are determined to encourage the study of everything connected with the subject, in all the schools where they have any influence, and they have marked out a course of study so admirable that it will be next to impossible for any one carefully to go through it without gaining some interest, knowledge, and proficiency in their home duties.

In our next chapter we will consider the course they have marked out. Let us close this one by giving you some extracts from clever writings as to the way in which woman's work has lately been done.

Dr. Lankester says:—

"In every relation of life, it is most important that the woman should understand the causes of disease in her family. She is essentially the mistress of the household, and if she neglect the care of her children, or the superintendence of her servants, unnecessary disease and death will be the result. *One of the great causes of preventable disease and death all over the land, is the utter ignorance of the majority of females of the laws which govern healthy life.*"

Mr. Buckmaster says:—

"The education of women for the proper work of women, is about as bad as it can be; they go to school and learn all sorts of '*ologies,*' *and often grow up with a contempt for those household duties which have ever been the soul of domestic happiness.*"

"There was a time *when ladies of rank* used to wear white aprons, and spend some hours every morning in the kitchen, and with their own hands prepare the lighter dishes for their dinner."

"*The present indifference and ignorance of these matters is a great national misfortune.*"

And there is no one who knows anything of the matter but feels all this is sadly true.

CHAPTER III.

DOMESTIC ECONOMY.

"Some people choose wives who can sing,
While others choose those who can smile,
Or because they love books, or are nice in their looks,
Or by converse a dull hour beguile;
I don't care who 'tis, but he'll have to pay damage,
If in learning all else, she don't learn '*how to manage.*'"

IT is important that we should understand exactly what the term "Domestic Economy" really means. Let us refresh our memories by looking at the derivation of the words.

Dom-es—a home or family; *ic*—belonging to.
Domestic—belonging to a house or family.
Ec-co—a house or household; *nom-os*—management.
Economy—the management of the house.

Domestic Economy, the science that teaches everything concerning the management of the house and home of the family or household.

Social Economy, has to do with the management of united homes.

Political Economy, has to do with the management of *the masses*, to determine the relation of nation with nation, and many other great matters.

But Domestic Economy—our own science—has to do with everything connected with the right management of *the home.*

Course of study. Those who have marked out the course through which this subject is to be taken up in our schools, have displayed great wisdom. Remember the object they had in view, *they wish to help every girl to understand how to make healthy, happy, and prosperous homes.*

We said *girls.* Don't run away with the notion that care for the well-being of the home is the duty only of the wives and mothers ; they may have *most* to do with it ; but wherever a girl or woman is placed that, for the time, is her home ; and no matter what her position in that home may be—wife, mother, sister, daughter, friend, servant—no small share of the duties conducive to its health, happiness, and prosperity, devolve upon her.

But to return to *the course of study.* We all know that the greatest blessing in life is good health. No happiness and prosperity can be ensured without this. We are not surprised, therefore, to learn that the essentials to health are to be first looked after. There are four of them marked out. *Food*, *Air*, *Warmth*, *Cleanliness.* A careful consideration of these will occupy some time.

Then having considered the things appertaining to health we are to study how to act in sickness, that we may know not only what to do to keep well, but how to act if we get ill—not only how to prevent disease, but how to nurse it, and cure it. And after this we are to wind up with the way to earn money, the way to spend money, and the way to save money.

This is a brief outline of the course of study to be pursued by those who are learning in our schools the right management of a home, or domestic economy.

Happy Homes. Dear young friends, this little book is in your hands. Are you really, with all your might, going *to take up* the subject: not for the sake of passing the examination only, or of helping others to pass, but because its aim is to fit you to do your woman's work all through your life?

We do not know what you are like, or what you mean to be. We do not want to help you especially to be good teachers, good needle-workers, or good servants. We know you must *be women*, if you are spared, and we know the work *that distinction* will bring upon you. It is to help you in getting a knowledge of *that* work that we are writing.

It is a glorious work, this happy home making. A mighty array of *homes not happy* are waiting for the workers. Will you be one of the band? Every one of us who earnestly and heartily enlists in such a service, will lessen the sickness and suffering, the want and improvidence, the sin and the misery from which the world groans. Is it not a glorious work? Will you make it yours?

You cannot shirk your responsibility. Whether you perform it or not, your duty remains the same. It is with you, as with David, the anointing oil was poured upon you without your wishes being consulted, and you cannot undo the anointing.

You have had given to you a nature tender and gentle and loving; you cannot even look upon suffering without grieving. Surely you would scorn to grieve over an evil that you make no effort to remove.

Only girls! and yet how mighty your influence and your opportunities. As daughters, as sisters, who can estimate the value of the work you may do? Oh, begin it now! strive by theory and practice to perfect yourselves in all that belongs to your life, and the business for which you were created.

There comes to our mind now two events in the life of Him who left us an example that we should follow His steps. Shall we remind you of them?

Visit to the Temple.

A little country boy, brought up in a far-away village, is taken to the great temple, in the great city. It may well be supposed that the crowds, and the worship, and above all, the priests and great men, would fill the little mind with wondering awe, and that the child would shrink to his mother's side in diffidence. But no, He too had received his appointed work, and He did not draw back from it, even as a child. For three days they sought Him sorrowing, and found Him at last in the midst of the doctors, both hearing them and asking them questions. And all that heard him were astonished at His understanding and answers. "Wist ye not," he replied, in answer to His mother's words, "Wist ye not that I must be about my Father's business?"

Christ's Example.

And then when the life, the beautiful holy life, on earth was nearly ended, what were His words then? "I have glorified Thee on the earth; I have finished the work that Thou gavest me to do." The work He did, began when he was a tender child, and was carried on to the end of His days.

And with His example before us, let each of us strive, irrespective of our age, to begin our work now; to endeavour, by our influence and by our example, to lessen the evil and to increase the good around us; to wage war with everything that injures the health, the happiness, or the prosperity of the body or soul of any member of our respective families. And who can say how much good may be done?

We ask you to come with us in thoughtful earnestness through these pages, with your purpose steadily and firmly fixed in your minds, and with all our heart we say to each and all of you—God speed you.

CHAPTER IV.

WHAT ARE WE MADE OF?

"Mighty and great in our power are we found,
In the air, the sea, and the solid ground;
You have no wisdom, nor skill, nor treasure,
The strength and the worth of our power to measure.
Our works are numberless—everywhere round,
Nourishing—forming—consuming we're found;
But most are we mighty—guess us who can,
Who we all unite and form—a man."

WE are going to tell you a few things in this lesson, which, though they have very little to do directly with our subject, yet will help you to understand all the better what we may have to say to you by-and-bye.

Organization of Bodies.

Did you ever consider of what your bodies, and the bodies of all other animals and plants, are made?

"Dust," you will answer, "and they will return to dust again." Dust, truly; but what is dust? and how is it that dust assumes the form your very respectable self presents to the eyes of others? Let me help you a little. All plants and animals are made up of *organs* or instruments. For instance, your eyes are the organs or instruments of seeing; your ears of hearing; your tongue of speaking; your feet of walking; your lungs of breathing, and so on. Now because you are made up entirely of organs or instruments, which all unite together to form a whole, you are called an "organic being."

Gases. The organs of which you are made up, or of which you consist, are all alike composed of the same elements. There may be a great deal of difference between the appearance and work of your eye and your nails, your hair and your flesh; but they are, nevertheless, derived from the same source. This is the same both in plants and animals. Now the elements, which compose the organs of organic beings, are called the organic elements. Here are their names:—Carbon, Hydrogen, Oxygen, Nitrogen.

1. *Carbon*—from *Carbo*—a coal.

Carbon is the only one of these elements which remains solid at our ordinary degree of heat or temperature, so that all solid things contain a certain amount of carbon according to its solidity. We find it largely in coal and charcoal; but it exists in its purest state in one most beautiful gem, the precious diamond. Carbon is easily burned under the action of the air we breathe. It forms not more than an eighth part of the human body. "A human body, weighing 154 lbs., contains 21 lbs. of carbon."*

2. *Hydrogen*—from *Hydro*—water.

Hydrogen is a gas, and is the very lightest thing known in creation. When it is united with carbon in the air, it forms *flame*. The gas in our streets is hydrogen gas. When it is united with oxygen, which is also a gas, the two gases form a vapour and become *water*. So you see if these two gases could quarrel and separate for ever, we should have neither fire nor water. Hydrogen depends a good deal upon oxygen; it cannot make either water or flame without its help. "In a human body, weighing 154 lbs., there are 14 lbs. of hydrogen."*

---

* Dr. Lankester.

3. *Oxygen*—from *Oxy-s*—sharp.

Oxygen is also a gas, and is the most active thing known. Without oxygen no animal could breathe and no fire could burn. You cannot *see* a gas; if you could you would find out that oxygen is always at work; united with hydrogen, it forms water; united with nitrogen, it forms the atmosphere; and united with carbon, it forms another important element. "A human body, weighing 154 lbs., contains 111 lbs. of oxygen.*

4. *Nitrogen.*

Nitrogen is another gas; its principal business seems to be to prevent the others from doing mischief. I think it ought to be called the "policeman's element." Oxygen is so active and so ready to burn, that unless it were diluted with nitrogen, it would soon consume the world and everything that is in it. "A human body, weighing 154 lbs., contains 3½ lbs. of nitrogen gas."*

Mineral Compounds. But besides these organic elements, which make up organic beings, there are other elements existing in the world. Among these are the earths, alkalies, and metals, or the mineral elements. They are very numerous—salt, soda, potash, lime, iron, sulphur, phosphorus, and many others. "In every human body, weighing 154 lbs., there are 4 lbs. of mineral element."*

But you must not think, because I tell you your body contains 21 lbs. of carbon, that you can dig out diamonds from it. None of these organic elements exist in our bodies in their original state; there are numerous substances with which they unite, and every fresh union forms a different compound. For instance, who would think that fire and water, two such opposite elements, really depend upon the same gas for their existence? and yet it is so—without oxygen there could be no fire and no water. Remember this, and be prepared to find that the union of these organic elements with each other, or with other elements, produce substances utterly different from themselves.

---

* Dr. Lankester.

These organic elements exist in our body in the form of various *compounds;* the most important are these—water, gelatine, albumen, and fat. All these things we shall have to talk about hereafter. "A human body, weighing 154 lbs., contains 111 lbs. of water, 15 lbs. of gelatine, 4¼ lbs. of albumen, 4½ lbs. fibrin, and 12 lbs. of fat.*

Now you will understand something of the primary elements of our bodies. We have attempted only to give you just enough to enable you to understand the better our future lessons.

Questions.

What do you mean by organic?
Of what are all our organs composed?
What is carbon? hydrogen? nitrogen? oxygen?
How great a quantity of each of these elements is contained in the human body?
Which of these elements united make *fire?*
Which of these elements constitute *water?*
When these four great elements unite with other substances, what are they said to form?
What are the principal compounds in our bodies?

CHAPTER V.

FOOD—ITS WORK.

"Tell me true,
What food must do."

"First it makes a little skeleton on which the house to build,
And then a fleshy covering this frame-work bare to gild;
It puts in all the furniture, and next—restrain your laughter,
Food now must cram this clever house till quite chock full of water;
And then, lest chills should do it harm,
'Tis food must work and keep it warm."

THE first subject upon which we shall enter in our study of domestic economy will be all that appertains to *good health.* We know that without good health all the lesser blessings of life are comparatively valueless. It is of the first importance, therefore, that all happy-home makers should understand everything that will help to the enjoyment of perfect health. We shall consider first "*Good Food;*" and there is a great deal more to be said on this subject than you may think.

Good Food. If we were to ask a class in a school, "What is good food?" we should probably get such answers as these; "What we eat to keep us alive." "Meat and bread and pudding." "Nice things to eat;" and the chances are that every one would try to bring before our notice her favourite dish. A good answer would be, "Food is the supply of nourishment taken to furnish the body with exactly what it requires." You are able now to tell us what the body does require—if the compounded organic elements of the body are found to be water, gelatine, albumen, and fat, with some mineral matter, then the required nourishment must consist exactly of these things.

There are other things as important for the body as *good food*, though a great many people live as though they did not believe this. They spend all their time, thought, and strength, in the endeavour to procure something to eat, and forget, or become careless about the other necessaries. We shall have to show you the importance of these things in future lessons.

The food we eat has really to make up the body, just as the material we use makes up a dress. An infant is a weak and helpless little thing; if it is properly fed, its bones get stronger, its flesh firmer, and all its powers are developed; if it is not fed, it wastes away and dies. It is the food it takes which makes the flesh and bones and blood increase day by day.

Wear of the Body. Now there is nothing in the world that will not *wear out;* the strongest machine wears all the faster the more it is used; even the action of the air upon things makes them decay. Did you ever wonder why your bodies do not wear out? If the handle of anything is constantly at work, up and down and round and and round, it would soon get loose, rickety, and perhaps break off. Why does not the socket of your arm or leg get out of repair?

We have known a thick ring on a finger wear thinner and thinner till it has quite worn through, and the finger, which was not nearly so hard at first, as the ring was, has remained plump and round. How is this? the body really does wear away as fast as any other substance! the secret is that there is something within us which keeps up a supply of fresh material for every part which wastes; that something is *the food we eat. For every part that wastes*—and there is no part that does not waste—like any other machine, the harder it works the more quickly it wears—flesh and bones and blood, fibres and sinews, nerves and muscles. When a young girl like you, we remember being quite startled at hearing, for the first time, this truth, "*About one-fortieth part of our bodies is wasted or wears away every day; so that in forty days the whole body has to be renewed.*"

Renewal of the Body. And this wonderful work of renewing the body is done by our food. You will therefore see at once that just what the body is made up of, the food must contain, because it has to put back in its place exactly the same material which has been used out of it, and that there must be in our food, substance to make flesh as well as substance to make bones, because flesh and bones are constantly wasting or wearing away.

And, besides having plenty of flesh and strong bones, a healthy body must be kept warm with an inside warmth. You know coldness is a sign of death; no fire will restore warmth to a dead thing; the living warmth is warmth that comes from within, and in every human being all over the world, this inside warmth is kept at the same temperature. Measure it with a thermometer, and you will find it no greater in the torrid zone than in the arctic regions. It is the food we eat which keeps up the regular heat of the body.

And food having supplied flesh and strength and bones and warmth, has also to provide the liquid necessary for our consistence.

And the liquids will form by far the largest proportion. "A human body, weighing 154 lbs., contains 111 lbs. of water, 15 lbs. of gelatine, 4¼ lbs, of albumen, and 12 lbs. of fat." So says the wise Dr. Lankester and other wise ones besides.

"Health for the Household." We remember meeting with a book, years ago, which did more to make us think than any other book ever did. It was called, "Health for the Household," written by Dr. Mann, and we are going to give you a little bit of it.

"You stand there firmly on the ground, and you look jolly and substantial enough. I should think from your appearance you have been in no way stinted in your supplies. I estimate, at a guess, that your substantial body would weigh some 150 lbs. if placed in the scales. Now what do you think the greater part of those 150 lbs. is composed of.—Bones? not exactly; you are too soft for that. Flesh? there seems plenty of flesh; but that is not the most abundant element. Brains? I am afraid they are less than the flesh. No. You will wonder indeed when I tell you that three-quarters of that firm and well-knit frame are nothing else but water. If I were to take your body and dry it, until all the moisture was dried out of it, there would remain nothing but about 37 lbs. of dry mummy substance, the rest would have steamed away as water. You will see then that water must be furnished in or with your food to keep up the supply necessary in your body."

We have told you of four things which food has to do in the body, to supply material for flesh and bones and blood and warmth. Remember that food, which does none of these things, is not really necessary. We eat a great many things because they are nice, they suit our palate; but the food that is really necessary is that which does one of the four things essential to the body.

You will now be prepared to hear about—

1. Flesh-forming foods.
2. Warmth-giving foods.
3. Mineral foods.
4. Liquid foods.

Questions.

What is the work of food in the body?

In what way does the body waste?

What is the proportion of liquid to solid substance in the body?
How often is it estimated that the body has to be renewed by food?
Is this a sudden, or a day by day, minute by minute, renewal.
Why do you not feel this change?
Why do you not feel the growth or waste of the body?
What may be said of natural human warmth?

CHAPTER VI.

FOOD—DIFFERENT KINDS.

"A little bit of this thing, a little taste of that,
All good—very good—don't forget that;
This because it's nourishing—*that* because it's nice,
This because it warms you up—whisk them in a trice.
See what clever management—here's a first-rate dinner,
Eat and get more plump and strong—never to get thinner."

WE said in our last lesson that just as there are different purposes to be effected by food, so there are different foods to effect those purposes. Now perhaps you will be surprised to hear that each sort of food confines itself to its own work, and that *one kind of food alone will not support life.*

Mixed Food. Clever scientific men have made experiments upon animals. They have shut them up and fed them with only one sort of food, and they have found after careful observation that an animal who is fed on *one kind of food only*, will not live much longer than *those who get nothing at all*, and are starved to death.

Food has to make flesh and strength—bones, blood, and warmth; so, as we said before, we must have—

1. Flesh-forming food.
2. Bone-making and mineral food.

3. Warmth-giving food.
4. Liquid food.

Each of these foods has its own distinct properties and work; the kind that will supply one demand in the body, does not undertake to supply another; and as every part of the body must have its supplies, we cannot do with one kind of food.

The food which has to make flesh must contain exactly the same constituents as the flesh contains; and the same is true of the bones and blood. Try and remember that just the same properties which make your flesh, your bones, your blood, and your warmth *now*, you must imbibe in the shape of food to make your flesh, your bones, your blood, and your warmth in the future. And it is of positive necessity that your food shall be of mixed kinds. If you eat only of the flesh-formers, where will you obtain bones? If you live upon warmth-givers, where will your flesh come from? We repeat again, one kind of food alone will not support a healthy life.

We will now make ourselves thoroughly acquainted with the things that actually compose our flesh and bones and blood.

Flesh. Flesh is that part of the body which contains all the strength and power of movement. It consists of what are called *the muscles*, placed closely together, yet each surrounded with its own individual membrane, and each capable of its own individual movement, independently of its fellow muscles. There are about 500 of these muscles in the human body.

These muscles are composed of tiny fibrous gelatinous cells, so small, and so closely packed together that more than 2000 of them exist in an inch of space. Each of these cells is filled with blood. If a piece of flesh is subjected to the continued action of hot water, a portion of this gelatinous substance comprising these cells is dissolved, and we obtain jelly; while if it be soaked in cold water, the blood passes out of it, and it becomes nearly white.

Flesh then consists of muscles, made up of tiny gelatinous cells or bladders, which are filled with blood. In these muscles are contained all the strength and all the flexibility of the body.

Bones. We were reading the other day of some experiments tried upon bones to shew what they contained. First, a bone was put into the fire, and all that would burn away was allowed to do so. On coming out of the fire it was found to be white, brittle, and porous, and on testing it further, what remained from the action of the fire was found to be *lime.*

Then a bone was subjected to heat, without flame, and dried in a closed vessel, it came out a piece of black charcoal. Now charcoal is called *carbon.* So it was proved there was *carbon* in our bones. Then they poured some chemical acids upon a bone and dissolved the lime and charcoal, and there was nothing left but a skeleton bone, all threads and fibre. This fibrous substance was called gelatine. By these experiments it was shown that our bones chiefly consist of lime, gelatine, and carbon.

Blood. Dr. Lankester, after analysing some blood, has said its proportions were as follows:—In every 100 parts, 79 are water, and the remaining 21 parts consist of substances made up of compounds of the four organic elements, called fibrin, albumen, and gluten, with some mineral matter, such as salt.

After making ourselves acquainted with the substances actually to be found in our bodies, we know at once what must be the properties in the food necessary to support those bodies.

Efficient Food a necessity. A proper supply of each sort of food is necessary. Directly the flesh begins to waste, the strength goes, because the flesh is the strength. We cannot be *emaciated* and *strong.* We may be strong without *fat*, but we cannot be strong without flesh or muscle.

We have seen little children, looking quite stout and healthy, with plenty of good firm flesh, who could not walk till long after the usual age. "Their bones seem weak," their mothers have said. And when we have asked the nature of their food, we have found that she has given them plenty of warmth-giving and flesh-forming food, but has left out the bone-making material altogether. No wonder the babies did not walk early enough. All who want to make healthy homes must see that the food supplied to their households contains the proper ingredients to do each sort of work required to be done.

Questions.

How many different kinds of food are necessary?
Why will not one kind of food be sufficient for us?
How has this been proved?
Of what does our flesh consist?
What are the principal ingredients in our bones?
How does Dr. Lankester analyse blood?
How may children suffer when not allowed a proper quantity of each sort of food?

After every six chapters, besides the questions which we have added to refresh your memory, we shall give you a few "*Whys.*" Will you look over the lessons till you can, in every instance, supply the "*because.*"

1. *Why* is woman's work the most important work?

2. *Why* is it of the greatest consequence that everyone should study the science of domestic economy?
3. *Why* has the Government been led to encourage the study in schools?
4. *Why* is this a sad necessity?
5. *Why* do we need food at all?
6. *Why* is it necessary that we shall have a mixed diet?

CHAPTER VII.

FOOD—FLESH-FORMERS.

In all the *shoddy* factories, they make their fabrics new
Out of the old and faded things, 'tis not more strange than true;
They tear and pulp, and twist and weave, and dye them as before,
Till the fresh bales, all spic and span, turn out from rags once more.
Just so, my friend, so stately, that much respected body
Is made of nought but odds and ends—*'tis nothing else but shoddy.*

LET us now consider these different sorts of food that are so necessary to us. The foods which form flesh and strength, are the only kinds of foods which contain nitrogen. They are called on this account *the nitrogenous foods.*

Flesh Formers. Of flesh-forming, strength-producing, or nitrogenous foods, there are several kinds. We used to be taught as follows: "The nitrogenous foods are albumen, fibrin, gluten, caseine, legumin, and gelatine." Since we learned that lesson more things have been discovered about food, and more experiments have been made upon it.

It has been decided by clever chemists and analysts that many of these things contain exactly the same properties;

but have received different names because they exist in different substances.

Fibrin and gluten, caseine, and legumin, are the same things; fibrin and caseine being procured from animal substances, and gluten and legumin, from vegetables. Also it has been decided that gelatine is not a flesh-forming food at all, as it contains no nourishment.

Gelatine composes the fibrous tissue of which the cells are made which hold the blood; it is found in the bones, the skin, and the membrane of all animals. It is necessary that some part of our food should contain gelatine to supply this tissue; but it is an indigestible substance, and is not nutritive.

The old faith in jelly for invalids is quite upset by this discovery. Jelly is light and pleasant, but it is not capable of increasing the strength.

Thus accounting for gelatine, we shall now consider the *three* flesh-forming foods that remain.

1. Albumen. 2. Fibrin and gluten. 3. Caseine and legumin.

Albumen. Albumen is found in the blood of animals, and composes the tissue of which the nerves are made. There are three kinds of tissues in the body—nervous tissue, composed of albumen; muscular tissue, composed of fibrin; and cellular tissue, composed of gelatine. Albumen is very rarely found in the vegetable kingdom: it is the most important of all flesh-forming foods, for two reasons; it is most easily digested, and contains more nourishment than any other flesh-former of equal bulk: for instance, to get as much nourishment as is contained in 1 lb. of albuminous food, we must eat 3 lbs. of food, containing fibrin or caseine.

Albumen exists in nearly a pure state in the white of an egg. One of its properties is that it will coagulate under the influence of heat, just as the white of an egg hardens in boiling. Albumen exists in all animal productions whether flesh, fowl, fish, or milk.

Fibrin and Gluten. Fibrin is found in all animal substances, and very largely in vegetables, when it receives the name of *gluten.* Remember that what is *fibrin* in flesh, is *gluten* in the vegetable kingdom. Fibrin contains, chemically, nearly the same properties as albumen, though not so digestible. Now as we derive the greater part of our food from the vegetable kingdom, fibrin or gluten becomes a very important article in our diet, and is really our principal flesh-former. We procure it from all the cereals or grain-rearing plants, such as wheat, barley, oats, rye, etc. In every pound of wheat, etc., the proportion of gluten is about 2½ ozs.

Caseine and Legumin. Caseine is found in the curd of milk, as in cheese; and legumin, containing the same properties, is found in peas, beans, and lentils, and other pulse plants.

Though very highly nutritious, caseine and legumin are the least digestible of the flesh-formers. People who work hard in the open air, scarcely know the word "*indigestion,*" and they eat cheese, etc., at any time, and derive benefit from it. It is the absence of fat from both these flesh-formers that render them indigestible. If the milk of which cheese is made, was never robbed of the cream to make butter, it would be far more wholesome.

This want in the nutritive properties, has probably given rise to the admixture of pork and bacon with peas and beans; and it is a common thing in agricultural districts for hard cheese and fat bacon to be eaten together, and this, not because the labourers understand anything about the want in caseine or legumin, but because the dictates of the palate demand that the cheese shall be supplied with the fat that has been taken from it.

These, then, are our flesh-formers and strength-producers; from these foods we must obtain muscle and flesh. Wiser heads than ours have studied and tested, and looked well into the subject, and they have decided that to keep a man's strength up to the mark, he needs to take four ounces of flesh-forming food every day. *Four ounces*, either of albumen, fibrin or gluten, caseine or legumin. He may get it from vegetables alone, but then he will have to eat a large quantity. For instance, a two-pound loaf scarcely contains 4 ozs. of gluten; while if potatoes are the only food, a man will need to eat 16 lbs. before he gets his four ounces of flesh-forming food. It is best to mix the diet—a little meat and plenty of vegetables.

In every pound of solid meat there are nearly four ounces of albumen. A quarter of a pound of meat daily would, with the other foods, be enough to supply the necessary demand for this kind of food.

Before we leave this part of our subject, we should like to give you an extract from one of Dr. Lankester's lectures.

Dr. Lankester on "Food."

"I find meat contains less flesh-forming matter than wheat, oats, maize, peas, and beans. But then comes the question of its digestibility. There is no doubt in my mind that the fibrin and albumen contained in meat is rapidly taken up and made use of by the body, while there is a doubt as to whether the nutritive matter in wheat, barley, oats, and maize, is all taken up. The gluten of bread, of barley, of oats, and maize, is less digestible than the albumen and fibrin of mutton and beef, in the same way as the gluten of bread is more digestible than the caseine of cheese and the leguminous plants. The quantity of caseine in peas and beans, is 23 parts in 100, so that they really contain more nitrogenous matter than butcher's meat; but then it is not so digestible, and this question of digestion must always be considered in the administration and consumption of food. The instincts of man seem to have guided him to this question, for when he works hard, or when he thinks hard, he has recourse to animal food, and he has discovered that it is more easily made into flesh than the same substances in vegetable food. I think then it is a safe conclusion that where nutritive matters are required, beef and mutton should be given."

Questions.

What used to be considered the flesh-formers?
To what have they been reduced?
What is the purpose served by gelatine?
What is albumen?
Why is it the most esteemed of the flesh-formers?
What is the chief objection to caseine?
How may this be remedied?
What is the quantity of flesh-forming food necessary to keep up a man's strength?

CHAPTER VIII.

FOOD—MINERAL.

Dry up the water!—blow up the gases!
What then remains of me?—*nothing but ashes!*

ONCE we heard a lecture which told us some wonderful truths. One of these truths was about the composition of the human body. As nearly as we can remember the lecturer said this: "Supposing we take a human being, weighing 154 lbs., and analyse him. First we should find he contained at least 111 lbs. of water; then when we had got rid of that, we should come to a fair amount of certain kinds of gas, united or compounded, and forming various substances, and when we had disposed of the gases, there would remain—*just ashes.*" Yes, water and gas and ashes; or as chemists call the latter, "*salts*" *and* "*phosphates.*"

Mineral Compositions in the Body. There would be phosphate of lime, of which the bones are mainly composed, salts of potash, peroxide of iron, chloride of sodium, and many other mineral substances, the names of which need not trouble us here. It is enough for us that these salts or phosphates are found in the human body, because then we know that, as home managers, it is our business to supply them in the food we eat.

We obtain the minerals necessary to form these ashes from water, from common salt, and more especially from fresh vegetables, and we find them in the bones and in the blood.

Water is more or less impregnated with mineral matter, according to the soil through which it flows. Indeed some water contains so much mineral that it is only fit for a medicine, like the waters of Bath, Buxton, Cheltenham, and other places. Water containing a good deal of lime is called hard. When this water is boiled, the mineral matter is thrown down or settles in flakes. Every one has seen such flakes in a teakettle.

Common Salt. *Chloride of Sodium* is the chemical name for common salt. This is the only mineral we take *directly* into our bodies. We not only flavour our food with it, but we place some of it on our plates in a powdered state, and dip the food into it as we eat. It is the natural want in our bodies which causes the craving for this salt. You know how we think it improves all our dishes, and how differently we find how a thing taste when there is salt in it.

We are not going to try to tell you all salt does for us. One of its uses is, no doubt, that it creates thirst, and thus enables us to absorb the necessary supply of water; and another is, that in common with all mineral foods, it helps to keep the blood pure. Do we not know well that it preserves meat from decay? We cannot estimate its value, even in this manner, in our bodies.

We know that persons who have been deprived of it for a punishment, have died suffering the keenest tortures. Once, a nation in Europe punished its prisoners of war in this manner. They were to have plenty of food, a good amount of liberty, *but no salt.* Not a taste in anything. Poor wretches! in a short time they died one after another, literally eaten alive internally by the living creatures that had multiplied within them to a fearful extent!

We cannot notice half the *ashes* found in a human body. Perhaps the most important after salt are phosphate of lime, which enters so largely into the composition of bone; and salts of potash, which act upon the blood. We obtain the former from the cereal plants or grasses, such as wheat, etc., and the flesh of the animals which feed upon those grasses; and we get the latter from fresh vegetables, such as potatoes, asparagus, radishes, turnips, carrots, parsnips, etc.

Mineral Properties of Vegetables. It is unfortunate that in cooking vegetables, a great part of these mineral properties pass out into the water in which they are boiled. The French people know this, and always save the water in which vegetables have been boiled to make soup with, so they do not lose it. It would be well if each of us could eat a portion of uncooked fruit or vegetable every day, such as celery, lettuce, water-cress, apples, etc., as it is of the highest importance to us that we shall imbibe a proper quantity of mineral food.

There used to be a dreadful disease among sailors, called scurvy. It was caused by their being unable to procure fresh vegetables with their food. People used to think it came from eating salted meat. Salt may render the meat hard and less digestible, and thus destroy some of its nutritive powers, but it did not cause scurvy. It was the absence of the minerals contained in vegetables only, which rendered the blood so impure, and the disease broke out. As soon as the sailors could procure plenty of vegetables, they got well again. The best cure for scurvy is the salts of potash contained in vegetables.

It has been discovered that lime water and lemon juice contain salts of potash. So all our vessels are supplied with this as a drink, and the scurvy is kept away.

Not long ago a vessel came home loaded with soldiers and sailors, and nearly all of them had the scurvy. What was the cause? They had been plentifully supplied with lime juice. Whence could the want of the right food have arisen? Chemists and physicians were puzzled until they came to examine the lime juice; then they found it was not lime juice at all! but merely some acid mixture which the seller had made up himself, and the poor fellows suffered for the deceit.

The Potato. Europe at one time used to be periodically visited by a dreadful plague—it does not appear now. And there are those who trace the disappearance of the dreadful plague to the introduction of the useful potato! The potato contains a certain amount of salts of potash, and as soon as it came into general use as an article of daily food, the plague died out.

It is said that in Ireland, where potatoes are the staple food, no one ever has the gout.

When the blood is kept in a pure natural state by the mineral food introduced, we are less susceptible of any inflammatory disease. Two persons may come in contact with the same infectious disorder; one may take it and die; the other may remain perfectly well.

Two people may go for the same drive in the same wind or wet; one may take cold, and have a dangerous attack of bronchitis or congestion, the other may not even sneeze. How is it that we hear of such cases? Depend upon it the blood in the one case is impure—rendered impure by the absence of its natural mineral correctives, and therefore predisposed to catch anything.

You see how important this mineral food is. Every home manager must look to it, that those she loves have a proper supply provided for them, or they will not be healthy members of the happy home she is striving to make for them.

We do not need a great quantity; not a quarter so much as of flesh-forming food, but we need some. No matter what the trouble to be bestowed in preparation, we must be supplied with a sufficient quantity of the mineral food, to be obtained only from vegetables.

Questions.

What are the principal minerals found in the body?
By what means are they introduced?
How does water obtain its mineral properties?
What are the chief uses of salt?
Why should we eat uncooked vegetables?
What disease is prevalent among those who cannot procure fresh vegetables?
What is the remedy for this disease?
How does an impure state of the blood influence the whole body?
Which is the best way of introducing our mineral food?

CHAPTER IX.

FOOD—WARMTH-GIVING.

A mighty engine this!
It forms its own designs, then works them out,
And in itself provides the fire and heat,
Where lies its hidden power. Mighty indeed!

PERHAPS it strikes you as something strange that food should have to warm you. Did you ever really consider where your internal heat came from? From fire and clothes? No. Would any amount of fire or clothing warm a dead body? The natural heat of the body is made internally, and is quite independent of any external heat.

Go without food, and you will soon discover by whose agency this heat is produced; you will find yourself getting colder and colder the longer you abstain. Now let us see how the food we eat produces warmth.

Carbon. You remember we told you in a former chapter, in speaking of the organic elements of which we are compounds, that "Carbon is the solid part of most substances, and is easily burned under the action of the air we breathe;" also we told you that "without oxygen gas no burning could go on anywhere." We want to say a little more to you about carbon and oxygen.

Carbon comes from *carbo*—a coal, and has been defined as "the fuel part, or part that will burn in all solid substances." Carbon exists largely in coal and charcoal, and in everything else we use for making our fires.

Oxygen. Oxygen is the gas which causes carbon to burn or consume away. Directly the oxygen is brought into contact with carbon, the burning or consuming of the carbon begins, and heat is given out. There is not always flame, but there is always heat. The degree of heat necessary only to consume carbon, is not great enough to cause flame; when flame is needed, another gas must come to help. We have seen many things which give out heat, and burn without flame. You know how gardeners keep various substances round their frames *to make heat*, and sometimes large ricks of hay burn quite black in the middle and often take fire, the heat becomes so great. The oxygen is conveyed by the moisture (you know it forms a large proportion of water) right into the rick, and there, as nothing disturbs it, the burning goes on.

Get this into your mind; wherever carbon is exposed to the influence of oxygen gas, the carbon is consumed or burned, and heat is produced.

Carbonaceous Foods. Now there are some sorts of food which are more than half carbon. You eat this food and thus put the carbon into your body; then you breathe in the oxygen in the air. What is done everywhere, when oxygen and carbon unite, is done within your body; the carbon is consumed under the action of the oxygen, and heat is given out. From this heat you get your internal warmth.

The warm-giving foods are called *carbonaceous*, because they contain *carbon;* they are called also *respiratory*, because they are consumed by *respiration* or breathing; but these carbonaceous respiratory foods are important in another way.

You have seen a great engine at work, and you have heard people say "its power is tremendous." What is its power? it is only a machine—is it the steam? No; its steam depends on something else. Just take a shovel and remove all the fire, and you will see at once where its power comes from. The mighty force with which the wheels go round and the cranks move, is all contained in that black shining coal or carbon, acted on by the gases necessary to make it give out heat. Without heat there would be no power or force; the great bulky engine would be in everybody's way, and do no good. The more you increase the heat, the greater the force it displays. We cannot now explain to you the wonderful connection between this heat and this force, but we know it is so; in the coals is stored up all the power, by which the engine is to do its work.

Now just as the coal contains the force by which the engine works, so your warmth-giving food contains all the force, by which you move or do anything. Once do away with *your heat* and you are powerless. Only see how little you can do when your hands are numbed and cold: you say, "My hands have no feeling in them, I cannot hold my pen." Recollect then that your carbonaceous respiratory food creates warmth in your body. The heat in your body contains all your force or power. The principal carbonaceous foods are *starch*, *sugar*, and *fat*.

Starch. We have become familiar with the word "starch," as applied to that preparation used to stiffen clothes. The starch in our food is somewhat different. Starch is a vegetable production; it consists of a mealy, floury substance, composed of carbon and water.

We find it in all the cereals or grain plants, in sago and tapioca, in potatoes, peas, and beans, and some other things. Some of these vegetables contain a much larger proportion than others; for instance, in every pound of wheat there are nearly 10 oz. of starch; in rice, 12 oz., and in potatoes not 3 oz. On mixing any kind of starch with boiling water, it forms a jelly-like food.

All starch foods are warmth-givers only, they will neither make flesh nor supply mineral food. Some grains, though largely composed of starch, contain also certain properties which are flesh-forming or strength-producing. The gluten found in wheat, and the caseine in leguminous plants are instances of this.

Most of the patent foods sold for infants are *starch* only, and are not fitted to support a healthy life. An infant fed on them may get fat and warmth; but it is not to be wondered at if its blood is impure, or its limbs weak. Late and difficult teething and backwardness in walking will be the result of such feeding.

Sugar. Sugar, like starch, has carbon for its principal ingredient, and is, therefore, another important fuel-food. Wherever starch is found, there we find sugar; and also, in many vegetables and fruits, which contain no starch. It is especially beneficial to young animals, and the natural tastes of children lead them to consume a great deal of it. Pure simple sugar can do no harm; the same cannot be said of the various flavoured, coloured, chalky sweets, which are in such favour.

Fat. Fatty foods contain a larger proportion of carbon than either starch or sugar. In every 77 parts of fat, 66 are carbon, 10 are hydrogen, and 1 oxygen. You will understand at once how that this must be the most easily consumed of all the heat-givers. It is so in the world around us, and it is so within us. What substance will so easily burn away as fat and oil? In persons, whose respiratory organs are diseased, it is a good thing for them to have a large quantity of this easily consumed warmth-giving food supplied; therefore we find physicians prescribing it as a medicine in the shape of cream, cod-liver oil, and other oils.

Superfluous fat accumulates in various parts of the body; this is shown in the case of the animals fed upon oil-cake and other fatty foods. Now a supply of fat is necessary in the body, not only to make fuel, but also to keep the joints well oiled and the sinews supple. So when people become emaciated from disease, or over-exertion, pure oil is administered to them to increase the supply of fat in the body.

We said that fat is more readily consumed for the purposes of giving warmth than any of the respiratory foods.

For this reason, and because the constant supply of warmth-giving food is imperative, we have got into the habit of mixing our warmth-giving foods; the one that will readily consume being added to those which consume more slowly. We eat butter or dripping with our bread, or we put suet into our flour puddings; indeed, we naturally object to dry starch foods, and this from no freak or fancy, but because it is necessary that a readily appropriated supply of fuel shall be presented to the body.

We shall have to look at these heat and force givers again. *Remember* that starchy, sugary, and fatty foods, (or as they are more properly called, farinaceous, saccharine, and oleaginous foods,) being composed largely of carbon, the fuel substance, where acted on by oxygen gas, keep up the natural heat and force of the body; but they do not supply flesh-forming or mineral food.

Questions.

What are the sources of all heat?
How are these things introduced into the body?
What other names are given to the warmth-givers?
What other property is contained in our natural heat?
What illustrates this fact?
What are the principal carbonaceous foods?
What do you mean by starch?
What should nurses remember when giving infants starch foods?
When starch food is so plentiful, why do we still use fat?
Why do people have to take cod-liver oil?
What names are given to starch, sugar, and fat?

CHAPTER X.

LIQUID FOOD.

It blesseth every moving thing in earth, and sea, and sky,
Gives life to tree and tiny blade in vale and mountain high;
It makes the barren place bring forth, and fills the sterile plain
With fruit and flowers and beauteous fields of waving yellow grain;
'Tis free and bounteous as the air, no living thing could be
In earth, or sea, or in the sky, bright water, but for thee?

LET me remind you again that every human body, weighing 154 lbs., or 11 stone, contains 111 lbs. of water, and you will see at once how requisite it is for us to be well supplied with liquid food.

Amount of Water in Solid Foods. All our solid foods contain a large proportion of water, and we imbibe a good deal of liquid food in eating them. Here is a little table that will help you to see the proportion of water in some of our commonest articles of diet.

100 lbs. of	meat	contain	63	lbs. of water.
,,	wheat	,,	26	,,
,,	bread	,,	42	,,
,,	fish	,,	78	,,
,,	cheese	,,	41	,,
,,	milk	,,	86	,,
,,	oatmeal	,,	11	,,
,,	bacon	,,	28	,,
,,	potatoes	,,	74	,,

Liquefication of Food. None of the food we eat can be appropriated by the various organs of the body for the nourishment of the parts which those organs supply, until it has become liquefied. All the foods, whether flesh-forming, or nitrogenous, mineral, or heat and force-giving, must be pulped, dissolved, and rendered soluble, and all their *essences* extracted before they can be of any use to us. The refuse part, the rubbish, passes from the body as waste; only these essences are retained to do each their especial work. The drier the food we eat, the more water we must imbibe to liquefy it, because it is *as a liquid only* that we can make use of it for our sustenance.

Pure Water the best Beverage. We use many kinds of beverages, which we shall notice more particularly in another place. These all consist of water, flavoured from some particular substance, to please the palate, just as tea is water flavoured from the leaf of the tea-tree, and so on.

But none of these beverages are so suited to the dissolving of our food as water alone. The pure water provided for us naturally is all we really need. Anything which is introduced into the water would be better left out, so far as the real actual use of water is concerned. Some of the additions made are comparatively harmless, others do much injury.

Remember that though we have become so accustomed to the beverages of tea, coffee, etc., that we shall scarcely persuade ourselves to do without them; yet pure water is the best beverage for us in every way. A pint of ale will not dissolve so much of the albumen or starch as pure water; for all foreign substances introduced into it, no matter what they may be, alter its simple and necessary properties.

Water is one of the great agents for supplying us with certain portions of our mineral food. As we said before, it becomes impregnated by the soil through which it flows, such as the phosphate and carbonate of lime, sulphur, and preparations of iron. In some cases it imbibes so much of these properties, as to be unsuited for general use, and injurious to the system.

Of all water, rain water is the purest, *if it can be caught straight from the clouds*, in a perfectly clean earthen vessel. After it has run over sooty tiles and through pipes, in which are deposited the refuse of birds, etc., then of course it is pure no longer.

There are two kinds of substances which spoil water, living and dead. Now if we are obliged to swallow either of these, certainly the living are preferable to the dead. Insects of the snail and the shrimp kind are bad enough, but surely the essence derived from the putrefaction of dead things must be far worse.

There are many ways by which water becomes spoiled. You know it springs from the earth, or is supplied by rivers, and is carried to the houses by means of pipes laid in the soil. Now the pipes below our feet are like the veins in our bodies, crossing and recrossing, and intersecting each other. Some carry water, some gas, some bear away filthy drainage, and it is a very difficult matter to keep the contents of one set of pipes from doing mischief to the others. Cases have been known where the sewage-pipes have leaked, and the water has become adulterated with this sewage leakage, and then whole districts supplied with this water have been devasted by cholera or fever; the impure water has poisoned the blood.

How to Purify Water. Water may be purified by boiling and by filtering; boiling destroys all life, and filtering removes all foreign substances. A filter, within the reach of everyone, has been thus described by Dr. Lankester:—"Take a large garden flower-pot and insert a piece of sponge in the hole at the bottom, place in it a layer of sand, two or three inches in thickness, and over that a layer of powdered charcoal; place the flower-pot on two flat sticks, laid across a clean pail; keep the pot filled with water, and use it as it runs through into the pail."

Remember that pure water is the most healthful and only necessary drink.

Questions.

What constitutes a large proportion of all solid substances?
To what condition must our food be reduced before we can appropriate it?
What is the natural liquid provided to aid in this solution?
In what way do we commonly alter its simple properties?
Why do we do this?
What are medicinal waters?
What renders water impure?
What are the consequences of drinking impure water?
How may everyone make a good filter for themselves?
In what other way may water be purified?

CHAPTER XI.

FOOD—ITS SOURCES. I.

All things created pronounced "very good,"
"Behold, I have given—to you it is food."
Gracious His word—most perfect His plan,
All things created still yield food to man.

BEFORE we notice particularly the machinery by which food does its work, we think it will be well for us to say a little more of the sources from which some of our food is derived. We shall find it necessary to consider these sources under four heads:—1. Animal Food. 2. Carbonaceous foods. 3. Beverages. 4. Condiments. Of the mineral foods, introduced in vegetables, in salt, and in water, we have for the present said enough.

Amount of Food required. You remember the animal foods contain albumen and fibrin, and the reasons which render these substances the most convenient and desirable flesh-formers. Well, we require a certain amount of each sort of food every 24 hours. Here is one estimate of the probable quantity. "A grown man requires, in every 24 hours, 4 ozs. of flesh-formers, 12 ozs. of starchy food, 5 ozs. of fat, 2 ozs. of sugar, and 1 oz. of mineral food."

It can easily be seen from this, that we require five times as much heat and force-giving food as we do of nitrogenous food. Supposing a man has to subsist on bread alone; before he can get enough gluten to supply the necessary flesh-former, he must swallow too much starch, and so he is obliged to fill himself up with an excess of one food, in order to obtain a sufficient quantity of the other. Now all excess does mischief. It impedes and weakens the digestive organs before it can be got rid of, and as a certain quantity and *no more or less* is required, so all excess must be actual waste; the body cannot appropriate it for its benefit, and has to work all the harder in order to get rid of the surplus.

Doubtless we can do without meat altogether, as so many people do, but it has been said that persons, who are compelled to subsist on rice, potatoes, etc., "*always carry an advertisement to that effect in the front of them.*" This remark refers to the distended swollen stomach, universal among such persons.

Remember it is a good thing for everyone to have at least an ounce or two of the albumen found in meat, everyday, and mixed with their other food, and they will get enough gluten and caseine to make up the deficiency.

Different kinds of Animal Food. The principal sources of our animal food are oxen, sheep, pigs, deer, game and poultry, and fish. Of all meats, mutton and venison are the most tender and digestible, though beef is said to contain more nourishment.

Pork is too rich to suit many stomachs, and bacon, like other salted meats, is likely to introduce too much salt into the system, when it forms the only animal food.

Veal and lamb, like all young meats, are not so full flavoured, or so easily digested, as those of riper growth.

All kind of fish is nourishing, but as it contains so large a proportion of water, you would need to eat twice as much as of beef or mutton. The more expensive kinds of fish, such as salmon, though richer in fat than the common kinds, do not actually contain any more nourishment. They supply more heat-giving food, but not any more flesh or strength-forming food than mackerel or herrings.

When wages were lower, and meat much cheaper, game and poultry were considered as food for the rich only. But *now*, when meat has risen, in some places, to the price of the "daintier dishes," a nice fowl can be procured for the same price per pound as beef or mutton. Those who can afford to purchase meat at all need not now confine themselves to butchers' meat, and it is no economy to do so.

The common kinds of poultry are *turkeys*, *geese*, *ducks*, *guinea fowl*, and *common barn-door fowl*.

Of game we have the varieties of *partridge*, *pheasant*, *woodcock*, *grouse*, and many other smaller birds, and *hares* and *rabbits*.

The name "*game*" is given to those animals which "*get their own living*," which live in a natural state, and do not depend on man for care or food. The hunting for and killing of these animals, furnish sport to those who pride themselves on their skill with the gun, and is the means of bringing a good round sum annually into the revenue, as no one is allowed to kill game, or use a gun for any purpose whatever, without obtaining a license, for which they must pay. All persons shooting without a license are liable to a fine.

Eggs. Eggs procured chiefly from the common hen, contain at least a quarter of their weight in nutritive food. Probably this gave rise to the saying, "One egg is equal to a quarter of a pound of solid meat." Eggs should be lightly boiled; when the albumen becomes hardened by the heat, it is rendered indigestible.

Milk. Among the sources of animal food we must not forget to notice *milk* and its productions. Milk has been called the model food: it contains all the properties necessary to support life—nitrogenous in the caseine, heat-giving in the sugar and butter, water, and mineral food. It is the natural food of young things, and the caseine or curd in the form of *cheese* is an important article of diet. Butter we shall notice among the oleaginous foods.

Questions.

What quantity of each sort of food is considered enough for us?
What will result from taking too much of one kind?
What animals furnish us with food?
Which is the most desirable of animal foods?
Why is poultry as easily obtained as butchers' meat?
Why cannot all people hunt and kill game?
What would become of the game if this restriction was removed?
What are the different properties found in milk?

CHAPTER XII.

FOOD—ITS SOURCES. 2.

In the tender grasses, in the towering tree,
God has said in mercy, daily bread shall be;
Everywhere, in cultured lands—in wild hunting grounds,
Where'er man exists to need—daily bread abounds.

IN considering more fully the sources from which we obtain the heat-givers, we shall notice first the farinaceous foods.

Farinaceous Foods. The farinaceous, starchy, or floury foods, are wheat, barley, oats, rye, maize, rice, sago, tapioca, arrowroot, and the various patent preparations made from any one of these.

Wheat. Wheat is to us the most important of the grain bearing-plants, because we obtain from it the flour of which our bread is made. Every pound of wheat contains 10 oz. of heat or force-giving food in the starch, besides nearly 3 ozs. of gluten. The gluten or nitrogenous property is found between the grain and the husk, hence it is that wheat that is most finely dressed, or freest from bran, has a good deal of its valuable nutriment "dressed out of it." The flour made from the entire grain of wheat, therefore, makes the most nourishing bread. The Americans have patented a machine, which is said to remove the bran from the grain so delicately that the gluten remains untouched.

Rye. Rye is the only other grain, besides wheat, that will make light and spongy bread. It is much used among the poorer classes in continental countries. It is said to keep light and moist for a much longer period than wheaten bread, and it does not become dry, mouldy, or crumbly. We *have* heard of rye bread six months old, which needed a hatchet to divide it, and plenty of water to soak it in, before it could be eaten. Rye bread is of a much darker colour, and is not so sweet and pleasant as wheaten bread.

Oats. In England oats are chiefly valued as food for horses, but in Scotland and other places are greatly esteemed as an article of daily use. They contain much nourishment; the gluten is richer, and there is more fat in the grain than is found in any other cereal plants.

It is said that oatmeal contains properties that are especially nutritive to the tissues of the brain, and that all who eat much oatmeal are great thinkers. Certainly the Scotch are not to be surpassed by any other nation in shrewdness and hard thinking, and their natural diet is oatmeal porridge.

In many places oatmeal is made into cakes, which takes the place of bread.

The continued use of oatmeal, unmixed with other food, produces various eruptive skin diseases. We are constantly reminded of the necessity of a mixed diet. We have already noticed that the dry nature of all the starch foods, leads us to make additions to them in the shape of fat, which shall render them palatable, and how common a thing it is to ask for bread and butter.

Barley. Barley, like rye, is often used as bread, though not to be compared to wheat. It is very largely cultivated for malting purposes. All the malt, of which beer is made, is procured from barley. It is hardy, and will grow in soil which will not produce wheat.

Maize. Maize or Indian corn is much used in America for cakes and puddings; it does not make good bread. The grains are hard and flinty, and the flour has a slight feeling of grit when rubbed between the fingers. In every stage of its growth the grain is used to make some different preparation for the table, all, doubtless, delicious, though perhaps indigestible. A patent preparation, called "corn flour," is largely used in England for puddings, etc., and has been much advertised for infants' food. The nutritive properties are the same as wheat, but its constant use is apt to produce constipation, and mothers, therefore, find it too binding for young children. We must not forget that all starch foods *only* make heat and force. When infants thrive on these patent foods, the milk with which they are mixed deserves the greater part of the credit; *that* is the real nourisher. Here is a little table comparing wheat flour, oatmeal, and maize.

	Fine Wheat Flour.	Oatmeal.	Maize.
Water	16	14	14
Gluten	10	18	12
Fat	2	6	8
Starch	72	62	66
	100	100	100

Some of the finest babes ever seen, have been fed only on milk and water, sweetened with sugar; the diluting of the milk depended upon the age of the child. At first, half-a-pint of milk and half-a-pint of water, well sweetened, was the proportion; the water was gradually lessened, and the milk increased, as the child grew older. A healthy infant will consume from two to three pints of milk in a day.

Rice. Rice contains less gluten than any other grain plant. It is cultivated in India, China, and America; the largest grains are procured from the Carolina rice. In countries where the people feed almost entirely on rice, they are spare in flesh and diminutive in stature; and yet they consume an enormous quantity; they cannot else satisfy the craving for the gluten, so sparely supplied by the grain. Rice, mixed with milk, forms a wholesome and cheap dish, and most children like it.

Besides the starchy foods obtained from the grain plants, there are many trees which yield food of a similar kind, among these is the palm-tree, from which we obtain sago.

The Sago Palm. The sago palm is largely cultivated on the north-west coast of Africa, and other places, where the natives almost entirely subsist on it. It is said to be so nourishing that 2½ lbs. daily are sufficient for the sustenance of a healthy full-grown man. The sago is obtained from the pith of the tree, which is rubbed through a sieve to give it its granular shape, and is then dried. One sago palm, when cut down in its seventh year, will yield 700 lbs. of sago meal.

Arrowroot and Tapioca. Arrowroot and tapioca are both procured from the roots of trees. These roots are soaked in water, and the starchy granules float out and settle. It is said that the juice of the root from which tapioca is procured is very poisonous, and that the Indians dip their arrows in it to render them poisonous before going out to fight. On the other hand, the juice of the root, which yields arrowroot, has the power of destroying the poison inserted by these arrows, so that the one is an antidote to the other.

The starchy powders obtained from both these roots is sweet, light, and palatable, and much in request for invalids' food and puddings, though I must again remind you that starch foods alone do not nourish. To attempt to restore flesh and strength on arrowroot would be a sad failure.

We can scarcely leave this subject without briefly noticing one or two other sources of similar food obtained from trees, which though not common amongst ourselves, contribute largely to the sustenance of our fellow-creatures.

The Bread Fruit Tree. This is a very beautiful tree, as large as our largest apple-trees. It is found in the South Sea Islands and other places. Its leaves are large and brilliant, and its fruit round and as big as a penny loaf. It bears fruit for eight or nine months in the year. The fruit is gathered before it is perfectly ripe, while the outside is hard and green; it is then rolled in leaves, and baked a short time on a hot stone.

When it is opened the inside is found to contain a pith of snowy whiteness of a spongy, mealy nature, like new wheaten bread, only a little sweeter. It will not keep after being cooked, it becomes tough and harsh. To secure to themselves a supply during the months that the trees do not bear, the natives bury the fruit in pits, as we do our potatoes; but it is not so good, as when eaten fresh from the tree.

Bananas or Plantains. The banana is a tree growing from 15 to 20 feet high, in the East and West Indies, its leaves are frequently 8 ft. long and 2 ft. broad. The fruit, shaped like a cucumber, hangs in bunches, and one tree will often produce 50 lbs. Like the bread fruit it is gathered before it is ripe, and generally roasted over a clear fire, and then eaten as bread, though there are various other ways of cooking it, as frying it, and also making it into puddings. Its properties very nearly resemble rice, and like that grain, it causes the stomachs of those who subsist on it to swell habitually. The bread-fruit tree and the banana quite take the place of our cereals in the tropical climates.

Questions.

Which of the grain plants make bread?
Which is the most desirable?
What quality is ascribed to oatmeal?
What evil results from its constant use?
For what purpose is barley chiefly cultivated in England?
What is the appearance of people who feed mainly on starch foods?
What is sago?
How do we obtain sago and arrowroot?
What is said of the juice of the roots from which these starch foods are extracted?
Describe the bread-fruit tree.
What are bananas?

"Whys," which want a "because."

Why should every person who works hard, or who thinks hard, have a little meat every day?
Why should we eat plenty of fresh vegetables?
Why do we like butter on our bread?
Why should water considered impure be boiled as well as filtered?
Why should eggs be lightly boiled?
Why are all nations provided with bread or something which forms a substitute for it?

CHAPTER XIII.

FOOD—ITS SOURCES. 3.

Sweetness is found, through all the plant world;
Sweetness, to be extracted, purified, refined, and then
To be enjoyed. Shall we say, that in the higher world
Of reasoning atoms, is this sweetness wanting?
Surely no! All that is needed is, the skill to extract,
And deal with it so cleverly, that it shall increase
The stock in trade of every man's enjoyment.

YOU remember that we told you that starch and sugar contained quite half their weight in carbon, and also that before any food could be used by the body for its nourishment, that it must be converted into a liquid, or, in other words, dissolved and rendered soluble in water.

Power of Saliva. Now sugar is readily enough dissolved in water, as we see every day of our lives; but starch will not so dissolve. You have doubtless seen this also. Mix it with water ever so patiently and well, and it will surely settle to the bottom again. Boiling water will turn it into a jelly-like liquid; but we should not care to undergo this process of "*boiling up*," so that our starch food may become thoroughly mixed with our blood. How is the difficulty to be overcome then? Your body itself contains the remedy.

The mouth is supplied with a fluid called "saliva," which is secreted in some glands placed under the tongue, and nothing can be put into it, but the saliva begins to flow. This fluid acts upon all our starch food in such a way that t becomes as capable of solution as sugar is. Indeed it gives to starch some of the properties of sugar.

Put a piece of bread into your mouth and subject it to the action of the saliva for some time by chewing it. What do you find? It becomes sweeter and sweeter every minute; it is being transformed into a substance more like sugar than starch; indeed, some people say, it is being made nto sugar altogether.

You know that wherever starch is found, sugar also exists, and could be extracted and made use of, if we did not find a more plentiful supply elsewhere. We once heard a very clever gentleman say that he had obtained sugar from sea-weed, and he would undertake to procure it from dry sawdust, if, from scarcity, we should require it.

Sugar. All our sugars are vegetable productions. There are sweet substances procured from minerals, such as the ugar of lead; but they are for the most part poisonous;

with them we have nothing to do. We procure sugar chiefly from the cane, the maple, the beet, the palm-tree, and maize. "It has become a necessary of life to us; we consume millions of tons, and millions of our fellow-creatures spend their lives over its cultivation and preparation."*

The Sugar Cane. The sugar-cane is now most extensively cultivated in America, although it was originally introduced from the old world. There are several varieties of the cane, and that is most largely cultivated in all districts, which thrives best in the soil and locality. The raw juice of the cane has been styled "*a pure food*," because it contains all the properties necessary to our support; there is found in it gluten, sugar, mineral food, and water. By boiling, skimming and draining, it loses much of its nutritious qualities. The negroes thrive and get fat upon this raw juice in cropping time. As the sugar comes to us, though it helps to nourish, it will not support life alone.

When the canes are ripe, they are cut down, stripped of their leaves, and crushed between the heavy rollers of a mill: this presses out the juice. It is next clarified with lime and filtered; then boiled down, and placed in wooden vessels to cool. When it is cool, if the boiling has been properly done, it crystallizes, and it is then drained in perforated casks.

The sugar is now called raw sugar, and the drainings are called molasses or treacle.

The whole process of sugar-making is a speedy one; if not quickly clarified, the sugar will ferment; if the juice is long in boiling, it will burn; and if it is not boiled exactly enough, it will not crystallize, and is spoiled. Formerly mishaps were so common and the waste so great, that not more than *one-third* of the juice of the canes that were cultivated ever found its way into the market as sugar; but since the introduction of suitable machinery the waste is comparatively very small. From the molasses and skimmings rum is distilled.

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* Professor Johnstone.

Beet-root Sugar. This is made almost entirely in France, Russia, and Belgium. The beet contains as much as one-tenth of its weight in sugar. As with the canes, the juice has to be pressed out, refined, and boiled down. Till the juice has been well refined it has an unpleasant flavour, but afterwards it cannot be distinguished from cane sugar. It is estimated that several millions of pounds of beet sugar are annually manufactured in Europe.

Palm Sugar. The upper shoots of the palm contain a thick sweet juice, which, when prepared by boiling, produces a brown sugar, which the Hindoos call "*jaggery*."

Maple Sugar. This is procured from the sap of a tree, called the sugar-maple, growing in North America. To procure this sap, slits are cut in the bark of the trees, and little grooved sticks are inserted, down which the sap trickles into the vessels which are placed to receive it. It is a common and necessary thing for all the settlers in North America, in clearing their farms, to leave several of these trees standing, in order to supply their families with sugar.

The sap is extracted in the month of March, when often the whole family start for the trees, carrying with them several buckets, pots, and various other necessary utensils, not forgetting a supply of food. They build themselves a little cabin, make their incisions in the trees, and visit them twice a day to bring away the juice, which they boil down till it crystallizes. It is remarkable that the first juice that runs is not sweet and yields no sugar. The pots, in which the maple sugar is boiled, are of glazed earthenware, and the sugar is pure white, and in no way inferior to cane sugar. The molasses is called maple honey.

Maize Sugar. Sugar is manufactured in Mexico from the green stalks of Indian corn. The sugar is of a good quality, and maize easily cultivated. It is often called Mexican sugar.

Questions.

What change must be effected in all food before we can utilize it?
What may be said of the bountiful supply of sugar?
Which are its principal sources?
Give some account of the sugar cane.
In what state is sugar most nutritious?
What are the principal difficulties connected with sugar-making?
What is beet sugar and jaggery?
Describe the way in which juice for maple sugar is extracted.

CHAPTER XIV.

FOOD—ITS SOURCES. 4.

The supple joint so lithe and free,
And rounded limb we owe to thee.

LET us now look a little more closely at the third of the heat and force-giving foods, the fatty, or oleaginous foods.

Oleaginous Foods. Oleaginous food serves several purposes in the body.

1st. It contains the greatest proportion of carbon. Out of every 77 parts of fat, 66 are pure carbon; therefore it is the most combustible, or most easily consumable food we use.

2nd. It accumulates under the skin and makes a kind of packing case all round the body. This keeps in the natural warmth (fat people are warmer than thin ones,) and gives the plumpness and roundness to the limbs and figure. As people get old they lose this coating of fat, and the skin wrinkles and hangs loose.

3rd. It gathers round the joints and keeps them well oiled, and about the muscles, and renders them supple.

4th. It forms a soft cushion in various parts of the body, rendering them capable of pressure, as in the palm of the hand, and under the sole of the foot. Man could not sit, or stand, or ride, or walk, or grasp, without this pad of soft fat, to form the cushion upon which the pressure comes.

When fat is taken as a heat-giver, it must be remembered that one pound of it is equal to two-and-a-half pounds of starch or sugar, and therefore less of it is needed.

Fat Insoluble. Perhaps you are thinking now of a sentence we have repeated more than once. "All the properties of our food must be rendered soluble or we cannot appropriate them to our benefit;" and you will tell me that fat and water will not unite. No; you are right, fat will not mix with water, it floats on the top of it.

Put a little water and oil into a bottle, and they will remain separate; shake them, boil them, they will not unite; but drop into the bottle a little soda or potash, and directly it melts, the two will combine, and form a milky fluid.

You know that in making soap, soda and potash are mixed with fat and oil, and then both combine with the water and form one mass; a compound, like most other compounds, utterly different from the original elements.

Therefore to make fat unite with water, we must introduce soda or potash.

Here you see another reason why a good home manager should be careful that her household should have a proper supply of fresh vegetables. It is necessary that we shall eat fat. No other food in its place will do its work in the the body; and it is also necessary that it shall become thoroughly mixed with the blood. Now the vegetables we eat must supply the potash and alkalis, which will bring about the union of the two opposing ingredients, and cause the fat to become so incorporated with the blood that it will be carried to every part of the body where the blood flows.

We have a friend who suffers from bad headaches, caused by biliousness. When he feels an attack coming on he refrains from all other diet, and for a day, at least, eats nothing but plenty of vegetable food.

All our ailments, which arise in the stomach, would be far better managed in this way—by altering the food, than they are in taking so much medicine, which must weaken the organs, although they may remove the evil. Depend upon it we do not half-enough value a plentiful supply of fresh vegetables.

The principal sources of our oleaginous food are the flesh of animals, milk, butter, and, in smaller proportions, the grain plants, vegetables and fruit, as nuts.

In *animal food*, that is esteemed the best, where the fat is well mixed with the lean. You have no doubt heard of the excellence of "marbled beef," where the fat seems to be mottled all over the flesh. Such meat is always juicier and tenderer than any other. It is because it improves the flavour and tenderness of a joint that we keep pouring fat over it while it is roasting, or, as cooks call it, basting it.

At least one-third of all animal food should be fat. Pork contains the most and veal the least fat.

Milk. Milk, by one process, yields butter, and by another, cheese. The milk of several animals are used as an article of food—cows, asses, and goats; asses' milk is lighter, and is often ordered for invalids; while goats' milk is richer in fat than either of the others. Butter and cheese are made from the milk of the goat, as it is from the cow.

There is great difficulty in towns in procuring pure milk, and various companies have been started to manufacture for sale "condensed milk." It is reckoned that in every 100 pints of milk, at least 80 are water. The condensed milk companies endeavour to evaporate most of this water, and by cooking it, to render the "essences" of the milk less liable to decomposition. Dr. Lankester pronounces this milk "an excellent preparation," and believes that children are likely to benefit from its use.

No animal substance so soon spoils as milk. In dairies the greatest cleanliness is imperative, a spot or drop of sour milk left in a vessel is enough to turn whole gallons sour also. Great care is needed in keeping all articles used for milk perfectly clean, especially those which are used for feeding infants.

A physician once stated that he believed out of the hundreds of infants, who died every summer of diarrhœa, there were very few cases in which the evil might not be traced to the use of feeding bottles with Indiarubber tubes. It is next to impossible to clean these tubes, and the milk sticking to the sides becoming decomposed, decomposes all other milk passing through them, and thus renders it unfit for food.

The old-fashioned feeding bottles, with just *a cap* fixed on the neck, which could be taken off and turned inside out in washing, was by far the best. But then this must be held in the hand; there was no putting the child into bed and letting it feed itself. How many evils have been introduced since the maxim of home managers has been not to "*take trouble*," but to "save trouble" to themselves.

The Grain Plants. Of these oats contain most oil. While wheat contains only one per cent. of oil; oats will yield as much as seven per cent.

Nuts. Nuts contain so much oil or fatty matter that some of them are pressed in mills for the sake of extracting it. Though, in this country, we use nuts chiefly as an article of dessert, in some countries they form an important article of food. Chestnuts are thus used in the south of Europe, and the cocoa-nut in tropical regions. The commonest varieties of the nut are, almonds, chestnuts, walnuts, Brazil-nuts, filberts, cob-nuts, hazel-nuts, and cocoa-nuts.

The quantity of fatty foods requisite to supply the natural demand for it, depends greatly upon the temperature. The colder the region, the more fat is relished. When our sailors go into the arctic regions, the craving for oleaginous food often surprises themselves. Their pressed meat, called "pemican," is more than three parts fat; and it is well known that in Russia and Greenland pure oil is drank with a relish.

Sir John Franklin once tried how much fat a little Esquimaux boy would eat; he gave him a lump of fat pork to begin with, and then put him on candles. When the boy had swallowed fourteen pounds of these, Sir John began to be alarmed, and gave him six pounds more of fat pork to finish with; but the boy declared he could eat as much again. The inside warmth must be kept up, and the colder it is, the more fuel is consumed, both within us and around us.

Questions.

What purposes are served by fat?
Describe the way in which fat is rendered soluble in the blood.
Write down all the advantages arising from the free use of fresh vegetables, which you can remember.
What foods introduce fat into the body?
Why do we *baste* meat in roasting?
In what regions is the demand for fat the greatest?
Why is it a bad thing to feed babies through Indiarubber tubes?
How may the mischief be remedied?

CHAPTER XV.

BEVERAGES.

Drink it!—'tis lawful, if gladness,
Gladness of heart is the aim;
Shun it, if aught of shame—sadness
Should visit your soul in its train.
Wine, *to make glad*, was God's blessing,
Not to make fools, brutes, or sin:
Leave it before it brings cursing,
Take but the pure blessing in.

AFTER saying so much of the things we eat, we now come to consider the drinkable part of our food.

We told you that the various beverages which are in daily use, consist of water flavoured with something to please or tempt the palate. Some of these are comparatively harmless, while others are decidedly pernicious.

We drink tea, coffee, cocoa, and chocolate, malt liquors, and wines. Spirits, which should never be used but as a medicine, we shall have to notice hereafter.

Tea. Tea is an infusion; the leaves of a certain plant are steeped in boiling water, and we drink the infusion.

Its use is so universal, that it is said more than half the human race, or more than 500,000,000 people are tea drinkers.

The tea plant is a pretty shrub, with dark glossy leaves, a native of China, but cultivated also in Japan, India, and other places. The plants are raised from seed, and are pruned and kept down to about three feet in height for convenience in picking. When they are planted out at distances of four or five feet, they do not look unlike a garden of gooseberry bushes. They bear a white flower, very much like our dog rose, which, contrasted with the dark glossy leaves, make the shrub beautiful. The leaves are plucked by hand, chiefly by women, and they are gathered at three different times; the youngest and earliest gathered leaves make the best tea.

After the leaves are plucked, they must be dried and roasted. Large flat pans are made hot, over charcoal fires; on these pans the leaves are scattered and moved about for a few minutes; then before they are dry they are placed on a table and rolled with the hand, after which they are again thrown on the hot pans and stirred for about two hours. After they are thus dried, they are sifted through sieves of different fineness, not only to remove dust and impurities, but to divide the teas into the different sorts that are sold.

The principal difference between black and green tea is that the green is roasted immediately it is gathered, and dried off as quickly as possible, while black tea is exposed to the air for some time after it is gathered, by which means it becomes of a dark or black colour.

Many teas are sent to England coloured a kind of blue-green; these are admired and sought after, for buyers ignorantly suppose that the uniform colour shows the delicacy of the leaf, instead of which it shows only the adulteration, every leaf being dyed. A Chinese dealer was once asked why he dyed his teas in this way. He made answer, "We never use dyed teas ourselves, because they are hurtful; but you English will pay more for the nice colour in it, so it is profitable to us to make it please the buyers."

A Chinaman thus writes of tea: "Tea is of a cooling nature, and if drank too freely, it causes exhaustion and lassitude." There is no beverage so refreshing to those who have to watch at night, as it prevents headache and drowsiness. It excites the brain to increased activity, and is therefore useful to those who have much headwork; but at the same time it acts powerfully on the nerves.

Chemists extract from the tea-leaf, a white powdery substance, which is highly nutritive, this is called *theine;* it contains a large amount of nitrogen, and has the power of making up to the body some of its daily waste. Those who drink tea with their food, not only feel brighter and clearer for it, but really add to their food more nourishment. It is no wonder then that the very poor and the aged have such an anxious craving for their "*cup of tea.*" At the same time it must be remembered that excessive tea drinking is an evil, as it excites the brain too much, and through the brain the nerves.

Coffee. The coffee-tree is grown in Arabia, in the East and West Indies, and other places. It is a beautiful tree, growing from 8 to 40 feet high; it is covered with dark shining evergreen leaves. It is sown in nurseries, and transplanted when six months old; but does not begin to bear well till it is three years old; it keeps on bearing for more than 20 years. Unlike most other trees it continues to flower and bear fruit all the year through, so that it is a continual source of profit to its owners. Its flowers are white and delicate, and its fruit grows in bunches, like our cherries. The berry we use for coffee is the stone inside the fruit. These berries are roasted, ground, and infused in boiling water.

Coffee possesses the same properties as tea, it exhilarates and prevents drowsiness and helps to prevent the daily waste; the nutritive property in coffee is called *caffeine*, which is almost identical with the theine of tea.

In many coffee-growing countries the leaf of the tree is infused the same as the tea-leaf, and this is by some said to make a beverage preferable to the berry. Coffee is largely adulterated, chiefly by chicory. Here is an account of the adulteration: "The coffee dealer adulterates his coffee with chicory to increase his profits; the chicory maker adulterates his chicory with venetian red, to please the eye of the coffee dealer; and, lastly, the venetian-red manufacturer grinds up his colour with brick-dust, that by his greater cheapness, and the variety of his shades, he may secure the patronage of the traders in chicory."

Cocoa and Chocolate. These beverages are both prepared from the cacao tree, which is cultivated most extensively in the West Indies and in the island of the Mauritius. The cocoa is obtained from the seeds of the fruit, which grows out directly from the stem of the tree and the largest branches. In shape it is very like a small vegetable marrow or thick cucumber. The fruit is opened, the seeds are cleaned from the pulp, roasted and pounded in a hot mortar; the pounded mass is mixed with starch and sugar and made into cakes. Sometimes the seeds are only crushed; they are then sold as cocoa nibs: this is the purest form of cocoa. The cakes are dissolved in boiling water, and form a thick nourishing beverage; the nibs are boiled in water for some hours, and the decoction is drank. The chocolate is more highly sweetened and flavoured with some essence, as vanilla, and sold as bon-bons or sweetmeats.

The drinking of cocoa has never been so universal in England as in Italy and Spain; nor has it the same power of soothing the brain, or raising the spirits, as tea or coffee. It contains more actual nourishment, but not so much of the nerve powder, theine, as either of the other beverages.

Besides these favourite comforting beverages, which are all taken hot, we must notice the various fermented drinks.

Cider and Perry. Cider is the juice of the apple. Perry is the juice of the pear. The fruit is collected and ground in a cider mill. The juice is strained through a horse-hair sheet and put into casks. Sometimes water is added to the juice to reduce its strength, and sometimes it is *made clean*, or without water. In the latter case, if kept a year or two, it acquires great strength, and very little will produce intoxication. In many of our English counties cider and perry are the common drinks, they are also largely used in France and America. The quality of the drink, as well as its keeping and its pleasantness, depend upon the kind of fruit used; the most valuable table fruits do not, however, make the best kinds.

Wines. Wines are made from the juice of various fruits, chiefly from the grape. The commonest grape wines are Port, Sherry, Madeira, Marsala, Claret, and Champagne. The quality of these wines depends upon many things; the climate, the temperature, the season, the locality, the degree of ripeness the fruit has attained, the way it is prepared, etc.

Fermentation cannot go on without the presence of sugar. The sugar in grapes is called grape sugar, and it can easily be detected in the raisin or dried grape, in the little white hard lumps found in the fruit. When the sugar decomposes or ferments, a spirit is formed, which is called alcohol, or pure spirit of wine. It is this spirit which does the mischief in all fermented drinks, by depriving the brain of its power, by exciting it to the madness, or producing the insensibility of intoxication.

To many of these wines sugar is added to make them sparkling and sweet, as in the case of champagne.

Simple, pleasant, and wholesome drinks can be made from our home-grown fruits, such as currants, raspberries, blackberries, etc. A small cask of home-made wine is a luxury that depends more upon the piece of garden ground and the cleverness of the home manager, rather than upon the expense to be incurred in procuring the ingredients.

Malt Liquors. Malt liquors, commonly called *beers*, are prepared from malt and hops.

Malt is obtained from barley. The maltster procures barley, wets it, and lets it lie in the dark in heaps, till it begins to spurt. It then has to be *malted*, or slowly dried in a kiln. Malted barley is sweet to the taste. When beer is to be brewed, the malt is crushed, and steeped in hot water for a certain time, and the liquor then drained off. This liquor is called "*wort;*" of this the beer is to be made. Hops are boiled in the wort to impart to it the desirable bitter flavour; the more hops used, the more bitter the beer. Hops are the flowers of a climbing vine-like plant, much cultivated in Kent, and the midland counties, for the use of the brewers. The plants are trained over poles, and a hop garden, with its hanging tendrils and blossoms, is a pretty sight. When the "hopping," or hop-picking season commences, thousands of persons, whose homes and occupations are in the towns, go out to the pleasant country places to pick them. It is easy work, and the industrious earn a good deal in a week; but the number of hands employed, and the little skill needed, bring together to one place all sorts of people, who are not particular as to words or deeds. Honest and industrious workers have to bear the same stigma everywhere cast upon "those hoppers."

National Beverages of other Countries. Beer can be prepared from other grain, as maize, rice or wheat. Maize beer, or "chica," is largely drank in South America, and "quass," or rye-beer, in Russia. There are various other national beverages produced in different countries, as the "koumiss," prepared by the Tartars from milk, and the "toddy," prepared from the palm-tree, in the South Sea Islands.

Whatever contains sugar can be made into an alcoholic beverage, because the sugar fermenting produces alcohol, and wherever alcohol is, it will act upon the brain and cause intoxication.

Questions.

What are our common beverages?
What is the tea-plant like?
How is *tea* prepared for use?
What is the difference between black and green tea?
In what does the chief excellence of tea and coffee consist?
What evils result from drinking too much of these beverages?
Describe the coffee tree.
How are the berries prepared for use?
How do we obtain cocoa and chocolate?
What are cocoa nibs?
What are cider and perry?
How are they made?
What is alcohol?
What are its effects?
What are the chief things that affect the excellence of wine?

CHAPTER XVI.

CONDIMENTS.

What a heap of things we take, with the food we eat,
Just to change its natural taste—some to make it sweet,
Some because they bite the tongue with a pungent sting,
Some because they *make it sour*—what a funny thing!

AFTER looking at the sources of our various foods, we cannot well leave the subject without giving a little attention to those things which we add to our food for the sake of the enjoyment we desire from the flavour they impart. We mean the condiments.

Condiments. Condiments are simply things taken with food. It is well that all who have to use these things in their home management should know something of the source whence they are obtained, as well as the purpose they serve.

There are two sorts of condiments: those which we use with the food to which we add salt, and those we use with things to which we add sugar. The first of these kinds are mustard, pepper, etc., and the second, spices, flavours, etc.

Mustard. Mustard is procured from the small round seeds of a plant which grows wild in many parts of England, and which the farmer has much trouble to get rid of. It is cultivated largely in Durham, and the seeds are ground into a powder, and dressed something after the fashion of our grains, but by a more tedious process, as they are so much smaller. They contain an acrid pungent oil, which imparts the biting taste for which they are valued.

If much of this oil is imbibed, it acts upon the stomach to produce vomiting and sickness. In any sudden emergency, where it is necessary to produce sickness, as in cases of accidental poisoning, a sure emetic can be made of a table-spoonful of mustard, mixed in half-a-tumbler full of water. The biting acrid properties of mustard also render it useful as a counter-irritant in cases of inflammation. A mustard plaster, or one of linseed and mustard mixed, applied to the skin over the affected part, draws the inflammation to the surface. Every good home manager should know how to make and apply this remedy; it is especially valuable in sudden attacks of the various throat affections of which we hear so much.

Mustard is generally eaten with the food which contains oily or fatty properties in abundance, such as beef, pork, geese, ducks. We are afraid it is often only used as a goad to make the stomach get rid of the richness it has no use for, for mustard acts as a stimulant. Delicate stomachs will do well to avoid any food which needs a remedy to accompany it.

Horseradish. Horseradish is the root of a plant cultivated because it contains the same pungent oil as mustard; it is finely scraped and eaten chiefly with beef. The root is not unlike the common monkshood, and disasters have sometimes occurred in consequence of the one being mistaken for the other. The root of the monkshood is darker than the horseradish and full of fibres; it should never be allowed to grow in gardens.

Pepper. Pepper is procured from a little creeping shrub, growing in the East Indies. The berries grow like bunches of currants, first green, then red, and afterwards black. We use the berries whole in pickling; but for general use they are ground to a powder. Black and white pepper are both procured from the same shrub; for white pepper the skin is rubbed off before grinding.

Cayenne Pepper. Cayenne pepper is procured from the dried pod of a kind of capsicum, growing in the East and West Indies. A very tiny portion is enough to give a powerful flavour to a good deal of food. All these condiments act as a stimulant when the digestive organs are weakened.

Pot Herbs. These are various plants, used for flavouring soups and making force-meat or stuffing. They are too well known to need much description. Those in commonest use are parsley, sage, mint, thyme, rosemary, summer and winter savory, and sweet marjoram. Rosemary is not now much used in cooking, except sometimes in farm-houses in boiling down lard; but in olden times sprigs of it used to be stuck into joints while they were roasting to flavour them.

The common mixture of sage and onion as seasoning for all those meats to which we use mustard, are well known, and also the parsley and thyme to make sweet stuffing for veal, some kinds of game, poultry, etc.

Pickles. Pickles are vegetables preserved in vinegar, and are eaten as an accompaniment to cold meat. Walnuts gathered in an early stage, red cabbage, onions, and mixed pickle, are among the most common. The vinegar renders the vegetables hard and indigestible, and they should be very sparingly used. Besides these accompaniments to food, various *sauces* are made and obtain a large sale; most of them are hot. The juice of mushroom, called catsup, or ketchup, is the most delicious and harmless flavouring for chops, hashes, or soups.

Remember that the use of all these things may become an abuse. The constant use of such stimulants weaken the digestive organs, by goading them to increased exertion, when they already work as hard as possible, thereby forcing them to do more than they ought to do. Depend upon it, if any of our organs are overworked to-day, they are less up to their work to-morrow.

The condiments we use with our sweet things are the spices and various flavourings. The most common of the spices are nutmeg and mace, cinnamon, cloves, allspice, and ginger.

The Nutmeg. The nutmeg is the seed of a kind of laurel, growing in the West Indies, and other tropical islands. This seed is encased in a network of flat fibre of a bright scarlet colour, but which becomes yellow when dried; this fibre is called *mace.* We use nutmeg grated to flavour our puddings, and an oil is extracted from it which is useful as a medicine. Mace is boiled with pepper and ginger in the vinegar we use for pickling.

Cinnamon. Cinnamon forms the inner bark of another species of laurel. It is cultivated chiefly in Ceylon. The bark is cut off in strips which curl up in the drying.

Cloves. Cloves are the flower buds of a pretty myrtle-like plant. They are much used for sauces and flavouring. It is said that more than 200,000 lbs. are annually brought to Great Britain.

Pimento Berries or Allspice. The berry of the pimento tree, which grows in Jamaica, is said to contain the flavour of all the other spices combined. Like cloves it is used largely in the manufacture of sauces, and is imported in large quantities into England.

Ginger. Ginger is the most largely used of all the spices. It forms the lower stem and root of a rush-like plant, and is now cultivated in all tropical regions, though it took its name from Gingi. When it is preserved green it is eaten as a great delicacy. The Indians use it green as a salad. The root is dried for importation. We use it powdered in cakes and ginger-bread, also in pickles and sauces. None of the spices are so useful as a medicine.

Essence of Almonds. Essence of almonds is one of the most popular of our flavourings; it is obtained from bitter almonds, from the kernels of fruits, as peaches, cherries, nectarines, and plums.

A drop or two are sufficient to flavour a moderate-sized pudding, and in cakes it should be added to the milk with which they are to be mixed. Large quantities are injurious.

Essence of Lemon. Essence of lemon is obtained from lemon peel; it is used for the same purpose, and in the same way as the essence of almonds.

There are numerous other essences; as, vanilla, procured from a Mexican plant, and is much used for flavouring sweetmeats; but we have noticed those most in use. We have also various seeds used for flavourings; as, carraways, cardamons, coriander seeds, etc.

Questions.

What are condiments?
How are they best divided?
Which are those in the first division?
Which are those in the second?
What fatal mistake has been made with regard to horseradish?
What is the difference between the two roots?
What is pepper?
What are the herbs in common use?
What is pickling?
Why are pickles objectionable?
Name the principal spices.
What is their use?
What is ginger?
Which are the most common flavourings?
Where do we procure them?

CHAPTER XVII.

FOOD—ITS MACHINERY.

We are His workmanship—that explains it all—
The wonder ceases while we trace *His* hand;
He formed all living things both great and small,
The wisdom was the Lord's which made and planned.

HOW difficult it would be to number the various things that are used for our food—things solid and liquid, sweet and sour, hot and cold, and almost every thing else. The greater part of the world's inhabitants are occupied in providing this food for our use, rising up early and going to bed late, cultivating, experimenting, mixing, preparing things to be eaten; on the land, under the land, on the sea, in the sea, everywhere; all parts of the world are made to minister to this want of mankind—food to eat.

Machinery of the Body. It is a complicated machinery truly, all this; but if every thing the world produces in the shape of nourishment was set before a man, he could not appropriate one atom of it to his benefit, if *his own* internal machinery were out of order. The consideration of *this* wonderful machinery must occupy us to-day.

We told you that all food must be liquefied; nothing that is incapable of solution, or of being dissolved, is of any avail as food, and it is the work of various wonderful organs within us, to reduce our food to the required condition.

You remember we explained to you that even the most solid-looking of our foods are largely made up of water; you have only to subject any portion of it to the slow heat of the oven for a time, and you will discover how little really remains when all the moisture is driven out in vapour.

But still the food put before us, watery though it may be, is in a very different condition from that to which it is necessary to bring it, before we can get any good out of it.

Every part of the body must be nourished. You have, perhaps, been quite satisfied to put the food into your mouth and swallow it, without troubling yourself further as to what became of it. You have never questioned how it gets to your finger nails to make them grow, or to your hair to keep it in order, and it is now a puzzle to you how such material as meat, bread, and vegetables should make substances so various as flesh, eyes, bones, nails, hair, and sinew. It will be also our business in this chapter to consider how this wonderful work is done.

The food, or the requisite nourishment, must be *floated* to every part of the body; forced through channels finer than a hair. After swallowing it, you pass it into a depôt, whence it is started to every atom of your frame, making flesh and strength, heat and power, bones and blood.

The Glands and Saliva. Let us endeavour to understand how the food becomes mixed with the blood; the beef and the pudding we eat do not go tumbling along the channels in lumps, you know. On putting the food into your mouth, the work of reducing it directly commences; the teeth begin cutting, tearing, grinding, and pulping with a will, and all the while other busy little servants help, by pouring moisture on the mass. These servants are called "glands," and the moisture is called "saliva."

We wish we had time and space here to make you fully acquainted with the most wonderful parts of your body, the various kinds of glands. We must leave you to go fully into the subject for yourselves, and the study will well repay you for your pains. *A little* we must tell you. Glands are really organs of *secretion:* they consist of clusters of cells and tubes; cells where certain important juices and acids are formed and secreted, and tubes through which those juices pass to their rightful destination.

We have no less than six of these glands (called salivary glands) in the mouth; two in each cheek, two under the tongue, and two on each side the lower jaw. We have others in the stomach, the bowels, and various parts of the body, and their work is wonderful.

The glands in the mouth are not unlike a bunch of elderberries—all cells and tubes. These cells are full of moisture, and nothing can be put into the mouth but the moisture begins to flow—moisture that not only softens the food, but which possesses such chemical properties as enable it to change the entire nature of the food, (for instance, giving to starch the same soluble properties as sugar,) so that it may become thoroughly mixed with the blood. The saliva acts more upon the heat and force-givers than it does upon the flesh and strength-formers; hence all starch and fatty foods should have a fair time allowed them in the mouth before they are swallowed. It is calculated that from a pint to two quarts of saliva from these glands are poured into the mouth every twenty-four hours.

As soon as the food has been pulped by the teeth, and moistened and changed by the saliva, it is swallowed and passed by other organs, each one very wonderful, into the stomach.

The Stomach. The stomach is like a bag, round and about which are muscular fibres, which have the power of expanding and contracting in different directions, like so many "reaving strings," all drawing different ways. These fibres begin to work as soon as the food enters the stomach, and so it gets rolled from side to side, over and under, all the time it remains there. The inside of the stomach is covered with a beautiful smooth pink skin, in which are innumerable openings leading to glands of another kind; these are called the "gastric glands," because they secrete the "gastric juice."

Gastric Juice. Gastric juice is an acid so strong that it is said to be capable of dissolving even silver and iron; its object is to work upon the food we eat, and dissolve it, and as the food is rolled about in the stomach these glands pour out upon it plentifully the secreted juice, till it becomes a thick grey fluid, which is called chyme. As soon as the chyme is thin enough it is allowed to pass through a small opening in the stomach into the bowels. It is estimated that at least seven quarts of gastric juice is secreted in the glands and used in the body every day. As soon as the food is in the bowels it is further reduced by secretions from the liver and sweetbread.

The gastric juice reduced the food, but it had no power to make the fat mix with the liquid chyme. The liver furnishes a secretion called "bile," which contains considerable alkaline properties; these having the power of soda and potash, cause the fat to unite or mingle with the liquid, which is still further reduced and changed into a milky substance, called "*chyle.*"

Chyle. All over the inside of the bowels is a coating of minute points, like the pile of velvet, each separate and individual, yet so close together that they form one smooth surface. These are called "villi," and are so many little absorbing mouths, which suck up the chyle, and convey it to the outside of the bowels to a network of vessels, called "lacteals," whose business it is to pass it upward into the veins, while the indigestible part of the food—that which the secretions have not rendered soluble, is passed out along the larger intestines as waste.

Blood Corpuscles. But in its passage from the stomach to the veins, the chyle undergoes a considerable change. Half the milky fluid is turned into little round cells, quite hollow and flat, like tiny flat bladders, without any air in them; so small are they that one drop of blood will contain 3,000,000 of them!

These cells float along in the white milky fluid up to the large canal, to which the lacteals conveyed it, till it comes to the great vein at the bottom of the neck, or the left side, through which the blood is returning to the heart, after going the round of the body. Here the white chyle, with its innumerable floating cells, gets mixed with the blood, and passes with it to the right side of the heart, from whence it is forced into the lungs.

Here the gaseous impurities, which the old blood was bringing back, is thrown off by respiration, and the whole, the old blood and the chyle, form a new blood, which is loaded with nourishment.

But about the little cells, what is their work? By the pure air in the lungs they are inflated, that is, they get filled with oxygen; they imbibe it from the air breathed in, and then and there their colour changes to a bright red. It is really these little cells which give colouring to the blood, and they are so small that you cannot discover them without the aid of a microscope.

And now you can tell me yourself what is their work? You know the carbon and other nutritive properties of your food was dissolved by acids, etc., till it formed chyle. You know carbon is the fuel which is to burn to keep your body warm. You know that oxygen is to act upon the carbon to consume it; and now, when we tell you that innumerable tiny bladders of this very oxygen gas are let loose among the carbon all through the blood, you will say with me, how wonderful is the way in which our internal warmth is kept up.

You remember David said, "We are fearfully and wonderfully made." Is it not a sad thing that we are so ignorant of the wonders within us, that we are constantly doing mischief to ourselves and those dearest to us, for want of knowing better?

There will be no excuse for any of *us* making mistakes in the matter after we have been through this little book together.

Blood in the Arteries. We have now shown you how food is converted into blood, and have tried to awaken your interest in the wonderful machinery used. We cannot close the chapter without quoting some words on the subject, which have been often quoted before; but they are too good to leave out. Dr. Edwards says, in speaking of the wonderful distribution of the blood in the arteries and tiny vessels to every part of the body :—

"Along, on the lines of these tubes and canals, through which the blood with all its treasures flows, God has provided a vast multitude of little organs, or waiters, whose office is each one to take out of the blood as it comes along, that kind and quantity of nourishment which it needs for its own support, and for the support of that part of the body which is committed to its care. And although exceedingly minute and delicate, they are endowed by their Creator with the wonderful power of doing this, and also of abstaining from, or expelling and throwing back into the common mess what is unsuitable, or what they do not want, to be carried to some other place where it may be needed.

"For instance, the organs placed at the ends of the fingers, when the blood comes there, take out of it what they need for their support, and also what is needed to make finger nails, while they will cautiously abstain from and repel, that which will only make hair, and let it go on to the head. And the organs on the head carefully take out that which they need to keep the hair growing, and refuse that which is only good to make eyeballs, and let it go on to the eyes. And so on, throughout the whole."

Is it not all wonderful? Ah, but it is all explained when we remember, "We are *His* workmanship."

Questions.

How may we prove that water forms a large proportion of all our food substances?
What is the work of the teeth?
What are glands?
What is the work of the salivary glands?
What quantity of moisture are they said to produce every day?
What are the glands of the stomach called?
What is gastric juice?
What effect has it upon the food?
What still remains to be done?
How is the work completed?
What becomes of it now?
In what manner is it warmed?
How is it conveyed through the body?
Write down a brief account of the manner in which food is turned into blood.

CHAPTER XVIII.

FOOD.—HOW TO BUY IT.

I watched one day a waggoner,
With a jolly English face;
His team was strong and worked with a will,
His waggon was long, yet he turned it with skill,
In a very narrow place.
There are many can turn in a good broad road,
That get stuck in a narrow lane.
To market with *pounds* there are plenty folks willing,
But only the clever ones turn round a *shilling*,
Till it goes as far again.

HAVE you ever heard the story of the boy and the beer? here it is.

"My son, take this jug and fetch me a quart of ale."

"Yes, father. Where is the money?"

"Money! my son; anybody can fetch ale with money; to fetch ale without money, that's the trick."

The boy pondered and departed, and presently returning, placed the jug by his father's side.

"Drink, oh, my father," said he.

"Drink! you young dog," said his father, "why there is nothing in the jug."

"Ah, father," said the youngster, "to drink when there is ale in the jug, anybody can do that; but to drink when there is no ale, that's the trick."

And now we say to you, to go to market with plenty of money and provide good meals, anybody can do that; but to go to market with little money and do the same thing, that's the trick!

Science of Marketing. Having now made ourselves acquainted with the various kinds, the work, the sources, and the machinery of food, it becomes us, as good home managers, to make sure that we know, at least, something of the science of going to market, or the best way to purchase this great essential of our daily life.

It may seem to be an easy thing to us, if we have the money, to go and spend it on food or on anything else; and so it is, there is no business so easily completed as *spending*, the difficulty is to spend wisely and well. The science of going to market is really a very difficult science, and one which requires *forethought*, knowledge, and some experience.

Forethought and Regularity. *First*, it requires *forethought*. A family must be *regularly* fed; they ought not to feast one day and to fast the next. They require a regular succession of meals, day by day, with the nourishment equally and properly apportioned. So the home manager has to think, and plan, and contrive, so that, according to her means, there may be sufficient for each day's need. Now, as one person's experience is often a guide to another, let us give you the benefit of ours.

Bill of Fare. It is a good plan to provide *a bill of fare* for the coming week, before any marketing is done. This will greatly help the general arrangement of the table, and really save a good deal of time. When this is done the housewife goes to market knowing exactly what she wants to purchase, and also what she means to do with her purchases when made. Of course she will not always be able to purchase all the meat she may possibly want; in hot weather this would be unwise; but she will be able to bespeak this or that thing, and arrange so that one purchase shall help out and *fit into* another.

Knowledge Required. *Second*, it requires *knowledge*. We have been learning how that we need food of different properties, and the home manager should acquire such a knowledge of these various kinds of food as will enable her to provide for her family according to their requirements. In the food for each day there will be the necessary warmth-giving, flesh-forming, and mineral proportions.

There is no denying that every family cannot have the best joints. On one table there may be everything in season, and out of season, "enough and to spare," and as a poor old woman once said to us, "and more *spare* than enough;" on others will be found the "*simple dinner*" of soup or fish, the roast or boiled joint, and the pudding; then there are others where there is a difficulty in providing a sufficiency of any *one* of the good things of which *the simple dinner* consists; and then, alas! that it should be so, there are tables which are bare even of the commonest necessaries. This should never be; it is some wrong done or suffered when it is so: if people are honest and industrious and careful, there should be no lack of necessary food.

In this world of plenty and bountiful supply it is a great wrong done, either *by* ourselves, *to* ourselves, or by others to us, if we are hungry and have no food to eat. We may not have *luxuries*—in reality we are far better without them; but the requisite supply of real comforting, flesh-forming, warmth-giving, mineral food is our right, and there is some wrong somewhere, when we are obliged to go without it.

And where the means are small there is all the more need for cleverness and management. Those who can order their joint and have it cooked, know nothing at all of the wonderful skill often displayed in providing the meals in some poor homes.

Properties of many kinds of Food. It is a matter for great thankfulness that so many kinds of food contain the same properties. If we cannot get a sirloin and roast it, we can perhaps get a part of the neck and *stew* it; and as our end is to serve a palateable nourishing meal, we shall succeed just as well as though our means were larger, and there will be a great deal more credit reflected on ourselves. In the flesh-formers, we have albumen, fibrin or gluten, and caseine or legumin to choose from; we get the first if we can, because of the reasons given before; if we are unable to do this, though we may regret our inability, yet we do the best we can with what remains to us.

We have got into the habit of mixing our foods, without exactly knowing why we do so. Here are some very common dishes, and you will be able to tell yourselves the qualities which each contain, and see at once the wisdom of the admixture.

Meat and vegetables,	albumen, starch, minerals.
Bread and cheese	caseine, starch.
Rice pudding with eggs and milk,	albumen, starch, minerals.
Bacon and peas	legumin, fat, minerals.
Liver and bacon	albumen, fat.
Eggs and bacon	albumen, fat.

And you will doubtless remember many more such admixtures yourselves.

Experience Required. *Third*, it requires skill and *experience*. And in going to market, the third thing will be as necessary as either the first or the second. Without this we shall be likely to make bad bargains, and to provide such food as will be neither enjoyable or nutritive.

Very little can be done, *in theory*, towards teaching the qualities which good food should present to the eye of the examiner. Careful observation and practice alone will make the manager an adept at buying well; and no matter how young a child may be, she is capable of making these observations. A few hints, however, may not be out of place here.

Animal Food. We must remember that unless the animal is diseased, all parts that can be rendered digestible are good for the food of man. If you have the opportunity of examining the tongue of an animal, you can at once tell whether it was healthy and well fed; it should be plump and clean, with the fat round its root of a pinkish colour; you may depend upon the meat from such an animal. The flesh of a healthy animal should be of a bright red colour, firm and springy under the touch, and the fat should be well mingled with the lean.

Very lean meat is always of inferior quality.

Marbled beef, in which *veins* of fat run through the flesh, is always good.

Soyer, the great French cook, recommends all purchasers to carry with them to market a pointed wooden skewer, and in testing the freshness of the joint to insert the skewer, and then apply it to the nose. You will be able then to detect any sign of taint. We are afraid, in some places, if this was carried out, joints would get pretty well stabbed.

The quality of all meat depends upon the way it has been fed, and that fed up quickly is the tenderest and juiciest.

The fat of mutton and lamb should be hard and white; if it is yellow or flabby, it is suspicious, and the meat, at least, will eat rank and strong.

Poultry. In choosing poultry the skin should be smooth and clean, the flesh firm and plump, the legs smooth without knots and lumps, and the toes brittle enough to break off when bent back. The comb and spur are a guide to the age of the bird, those of young ones not having become full grown. Dealers have been known, however, to remove these signs of age, in order to deceive purchasers.

Fish. It is impossible to eat fish too soon after it has been caught; it is decidedly unwholesome when tainted in the slightest degree, and it taints very soon. The nose is the best guide to discover staleness, because unprincipled people disguise the fish. The eyes should be bright and full, not sunken, the flesh firm and elastic, the body stiff, and the gills a bright red. The taint of fish may be partially removed by applying chloride of soda; but nothing will ever restore the original freshness, which is its chief excellence, when once it is lost.

Meat and poultry will be more tender if kept a few days after it is killed. The length of time for *hanging it* depends upon the season. A leg of mutton will hang in a proper place in winter time for ten days or even a fortnight. The keeping place should be cool and airy and well protected from flies. It should be examined when it is first brought home, thoroughly dried, and all the *kernels* in the fat removed, as they spoil at once, and taint the surrounding parts. In hot weather meat should be examined every day. Parts that are much blooded spoil the soonest. The outside taint or *mugginess* of meat may be removed by well scraping, and then washing in a little vinegar, just before cooking it.

Questions.

What three good qualities should exist in good market women?

Show the necessity for each quality.

What is the difference between necessities and luxuries?

What are some common ways in which food has been mixed?
What will be some of the signs of good flesh foods?
Of good poultry?
Of good fish?
What do you mean by *hanging* meat?

"Whys" needing a "a because."

Why does starch food become as soluble in our blood as sugar?
Why is it, that the colder the region, the more fat will be consumed?
Why are fermented or alcoholic liquors injurious?
Why should condiments be used sparingly?
Why are *glands* and *secretions* necessary to us?
Why does it need a clever head to do the marketing well?

CHAPTER XIX.

FOOD—HOW TO COOK IT. No. 1.

I *guessed* my pepper, my soup was too hot,
I *guessed* my water, it dried in the pot;
I *guessed* my salt, and what do you think?
For the rest of the day we did nothing but drink;
I *guessed* my sugar, my sauce was too sweet,
And thus by my guessing I spoiled our treat.
So now I guess nothing, for cooking by guesses,
Will ruin all skill, and produce but messes.

BY cooking we mean preparing food for the stomach, by subjecting it to the influence of heat; the object of this treatment is to render it more palatable and digestible.

The chief excellence in a good cook consists in the possession of such skill as will enable her to serve any sort of food in a tender and tempting condition, without one atom of its nutritive properties being lost in the preparation.

Influence of good Cooking. It is said that of all nations the English are the worst cooks. This is a national stigma, which all good managers wish to see removed; and so great an interest has been awakened on the subject, that of late years a National School of Cookery has been established, lecturers appointed, and lectures given, and all sorts of ways adopted to teach cookery to the people. And when we consider how great an influence *a meal* exercises on the health, the temper, the energy, and, consequently, on the happiness and prosperity of every family; surely no one will feel that too much pains and trouble can be taken about the matter.

We do not for one moment mean to urge that any one but *the manager* is to be engrossed over the question of eating and drinking; it is as good a motto as it is a true one, "We eat that we may live—we do not live that we may eat;" but in the one heart and brain that has to manage and contrive, in order to secure health and happiness for her household, the subject of this preparation of food will occupy no mean place.

We are afraid we shall never attain excellence in this department of our woman's work, till we have a more certain and definite mode of proceeding. For instance, we have just said, "food is cooked by being subjected to the influence of heat;" but we understand very little about the actual degree of heat which is really necessary.

We make up a fire, we put our meat down before it; at one time the degree of heat given out by that fire may be ten times greater than at another. We have no means of regulating it if we would, and very few of us have any knowledge of the degree which is really necessary, even if we had such means at our disposal.

Heat regulated by the Thermometer. In France, where the best cooks are found, nothing is done by guess; the water for boiling, the fat for frying, the oven for baking, are all regulated by the proper heat measure, the thermometer. It is said that in Paris and Vienna, the best bread in the world is made. Why? Not because of the flour, the yeast, the superior skill, but simply because every oven has an appliance to enable the baker to regulate the heat according to the proper measure, and thus to prevent the spoiling of bread in the baking.

Cooking Schools. In the cooking schools this matter is occupying a good deal of attention, and thanks to the efforts and experiments of those who manage, there is no doubt that the day will come, when, with every receipt in the cookery books, there will be given the degree of heat to which the food must be subjected to cook it to perfection. And then if every kitchen be provided with a thermometer, there will be no excuse for the mistakes arising from guess work, and a careful child even, will be able to cook nicely.

Till that day comes, we must content ourselves to profit by the experience of our grandmothers, and by sparing no pains and observation, we may, perhaps, hope to attain to such skill as was their pride and glory; while, at the same time, we shall have the benefit of such scientific research as may have a practical bearing on the subject.

Our Grandmothers. Our grandmothers would have found it hard to believe in many of the truths which this research has made plain to us. We are sometimes reminded, while thinking over these things, of the following anecdote:

John, the Sailor Boy. John was a sailor boy; he was home from his first long voyage, and was amusing his old granny with an account of some of the wonderful things he had seen, and was rather annoyed that the dear old lady did not sufficiently credit his statements. At last he gave her an account of the catching of a flying-fish.

"*Flying-fish*, Johnny lad! nay, now you don't expect your old grandmother to believe *that!* fish cannot fly, my boy; only birds can fly."

Johnny was annoyed still more, and determined to try her with something she would believe.

"Well, granny, one day we were fishing in the Red Sea, and at last I hooked up something that was round, and when we had examined it, we found it was one of Pharoah's chariot wheels, all safe and sound."

"There, Johnny man, *that* I can believe, because we know from the Bible, that story was quite true."

And in like manner, the managers of the old world require more than our unsupported authority to convince them of the desirability of some of the changes scientific research has led us to make.

Old and New Method of Cooking. Let me explain more clearly what I mean. These same grandmothers used to say, "Take the joint of meat for boiling, well cover it with cold water, set it by the fire and gradually bring it to a boil, so that it may slowly get warmed all through, then keep it gently boiling till it is done."

And again, "In roasting, make up a good fire before you put your joint down, let it lay in the dripping-pan, at some distance from the fire, till it is warmed all through, then suspend it at a distance, and gradually bring it nearer."

Now *we* say, in boiling meat, have the water all ready boiling, plunge the meat into it, and let it boil briskly for about ten minutes, then draw it back from the fire, and keep it at the gentlest possible simmer till it is done.

And in roasting—make up a good fire, suspend the joint as near to it as possible, without burning it, and subject it to a quick heat, for about ten minutes, then draw it back from the fire, and allow it to cook slowly and gradually.

Nothing could be more opposite than these two ways of proceeding, not even the flying-fish and the chariot wheel; and a very pretty bustle we should have in our kitchens, if an ancient and modern cook could, at the same time, be employed to look after our dinners, each armed with her own receipt.

And these changes have come about through the researches before mentioned. Here is the

Solution of the Problem. The most convenient and nutritive flesh-former is albumen; it is found pure in the white of an egg, and exists in the flesh of all animals (forming the tissue of which the nerves are made), and in the blood. It is one of the properties of albumen that it coagulates under the influence of heat. You see this in the case of an egg; if it is put into boiling water, *it sets* or becomes hard in a very short space of time, and if you subject it to more and more heat, it not only *sets*, but becomes tough and leathery, hard and indigestible.

Cookery books and physicians' prescriptions often recommend *a lightly* boiled egg; the reason is this, if you do too much to albumen, you destroy its chief excellence—its digestibility. Albumen will harden in water which stands at 180 degrees by the thermometer. Water does not boil till it is at 212 degrees. Put an egg into boiling water, its coldness immediately sinks the temperature to 180 degrees, it is quite sufficient to keep it at that; move the saucepan back on the hob; it must not boil, or it will spoil; leave it for three or four minutes, or five or six, it cannot be hurt *unless the temperature of the water is increased.* You will always have your eggs delicately cooked; you will do away with egg boilers, and watching the clock, or any of the other ways by which you know "*when an egg is done.*"

Now albumen is albumen all the world over. It is necessary that it shall be set by a certain heat before we eat it; it is not desirable that it shall be hard and tough. If we subject it to a great heat all the time it is cooking, we render the meat hard and tough because we harden the albumen. Here is the necessity for gently simmering our boiling meat, and for keeping our roasting joints back from the fire *after the first five or ten minutes.*

But why are we to put the joint into boiling water, and close to the fire at first? Ah, that is another wrinkle, our dear grandmothers did not have in their venerable brows. We said that albumen comprises the nerve cells, and is found in the blood. When the joint is subjected to a slow heat at first, a good deal of its nutritive property is soaked out in the water, or drips out as gravy; indeed, our grandmothers used to sprinkle salt over the joint "to draw the gravy out."

Remember that *our* principle is to send the joint to table without depriving it of an atom of its goodness; and so we reason thus:—Albumen hardens at once under the influence of a great heat, therefore we subject just the outside albumen to the influence of a great heat at first, and thus cause it to form a case or shell all round the joint, and so keep the nourishment in, and as soon as this case is formed, we cook it as gently as possible, lest the inside albumen should harden too. And this is only one way in which science has taught us to attain to more perfect skill than our grandmothers.

Questions.

Why is it a bad thing to trust to guesses?
What is the proper measure for heat?
How should an egg be boiled?
Explain why meat should be put into boiling water.
How would you manage a roast?
At what temperature does water boil?
At what temperature can meat be cooked?

CHAPTER XX.

FOOD—HOW TO COOK IT. No. 2.

Her smooth brown hair was braided back,
Not flaunting in the breezes;
When loose ones cling to this or that,
The butter, cakes, or cheeses.
Her dress was neat and clean and bright,
Not trailing far behind her;
An apron covered her all round,
And where do you think I find her?
Not in the streets, the hall, the dance,
My fairy most bewitching,
But all amongst bright pots and pans,
A-cooking in the kitchen.

WE must now proceed to consider the various ways in which food may be prepared.

Roasting. Roasting is the cooking of meat by suspending it in front of the fire. Only the best joints are suitable for this method of preparation. We roast sirloin and ribs of beef; shoulders, legs, loins, and saddles of mutton; fillets and loins of veal; legs and loins of lamb; haunches of venison; and poultry and game.

We have various contrivances for suspending the meat before the fire. *A bottle jack*, a little machine, with a revolving wheel, which turns and returns, on being wound up like a clock, and to which the joint may be suspended. After winding up the jack it needs no further attention till it has run down, and then it must be wound again.

The bottle jack is expensive, so a good substitute may be made of a hank of twisted worsted attached to some strong wire which fits on to the mantel-shelf, with a spring; this needs constant attention, as if the meat stands still it burns.

In olden times, when wood was burned on open hearths, the meat was roasted on *a spit;* a bright steel bar, which was run through the joint, and placed on supports in front of the fire. The spit was kept turning by a strap, passed from the spit to a wheel in the chimney, which was turned by the smoke. Earlier still, little fat short-legged dogs turned the spit, by being trained to tread round a wheel, placed in a kind of paddle-box, to which the spit was attached.

When a joint has to be roasted, the fire should be cleared out at the bottom, gently, with a shovel, well made up, and all the dust removed from the grate and hearth. A good strong fire is necessary, one that will not soon need replenishing. If you have to keep making up your fire, while the roasting is in progress, you will probably have grease on the hearth and coals in the dripping. The fat of your joint should be covered with a piece of clean white paper, fastened on with some thin wooden skewers, to keep it from burning.

Place your joint near the fire, at first, to harden the albumen, and thus prevent the loss of any of its good qualities. After about ten minutes move it back, and allow it to roast more gradually. Baste the meat in its own fat frequently while it is roasting, it improves its flavour and tenderness. When the meat is nearly done, baste it well for the last time, and then dredge it over with flour from the dredger, and allow it to brown and froth nicely. It must not be basted after dredging, or the flour will wash into the dripping.

The time a joint takes to roast or boil depends upon its size; it is a pretty safe rule to allow 20 minutes to every pound of meat, and 20 minutes over; thus, a leg of mutton, weighing 10 lbs., would require to remain at the fire about three hours. When a joint is nearly done, little jets of steam will come puffing and hissing out of it. In taking it up, do not prick it with a fork, as it will let out the gravy. It should be of a tempting brown, frothed with the flour, and scorched nowhere.

The appliances for roasting are:—

1st. *The suspender*, consisting of a bottle jack, or some simple less expensive contrivance, which takes its place.

2nd. *A dripping-pan*, of bright tin, with a well in the centre, having a lid to keep out the coals; into this well the dripping drains ready for basting.

3rd. *A ladle*, for basting, or a long-handled spoon.

4th. *A stand for the dripping-pan.* To some grates there is a slide beneath the fire, which draws out, and is meant to support the dripping-pan; but generally these are too close to the fire. A moveable stand is much better.

5th. *A meat hastener.* A contrivance intended to screen the joint from the outer air, and to prevent the heat round the meat from being carried away. A meat hastener sometimes consists of a kind of moveable cupboard on wheels, fitted with shelves, and lined throughout with tin. The shelves serve as places on which to air linen and warm plates and dishes, and the bright tin lining throws back or reflects the heat on to the roasting joint; or it may be a smaller cupboard, made entirely of tin; or only two large sheets of tin, made to fold together. I have seen a capital meat hastener made of a small three-fold towel-horse, and covered with coarse green baize, like a screen. This is the best contrivance for cottage homes, as any tidy handy man can make it, and it serves a double purpose.

Boiling. Boiling is the cooking of meat in hot water. The joints usually boiled are salted beef and pork, legs and necks of mutton, calf's head, knuckle of veal, poultry, rabbits, and all kinds of fish. Meat should be put into boiling water at once, and allowed to boil for about ten minutes, and then a temperature of 180 degrees kept up till the cooking is completed. The lid of the saucepan should not be removed oftener than necessary, though it will require to be carefully skimmed as often as scum rises to the top of the water; if this scum is allowed to boil down, it discolours the meat. The same time is needed for boiling as for roasting a joint. The saucepan or kettle should be large enough to allow of plenty of water being used, and this water should in no case be thrown away; we shall refer to its uses by-and-bye. The appliances for boiling are saucepans of various sizes; *a skimmer*, which being perforated, allows the liquor to drain back into the saucepan, while it retains the scum.

For boiling fish there are especial oval kettles, called fish kettles, fitted with *a drainer*, on which the fish is placed in the kettle; when the fish is done, the drainer can be lifted out by means of handles, and the fish allowed to drain dry before it is dished up; this is to prevent the breaking or disfiguring of the fish in taking it out of the water.

Broiling. Broiling is really roasting meat *over the fire*, instead of *in front of it*. It is the most palatable way of preparing small joints of meat that we do not wish to make a stew of; such as chops, steaks, trimmings of joints, and many kinds of fish.

The pieces of meat called *trimmings*, if kept till they are tender, delicately prepared by washing in cold water, and careful drying, and then are beautifully broiled, will make a nice change in the modes of preparation, most common among the poor. The great objection to broiling among thrifty housewives is that the fat drips back into the fire and is wasted. We are afraid there is no gainsaying this; but to make the meat more enjoyable to those she caters for, a good manager will be content to sacrifice now and then a spoonful of fat; it is the nearest approach to roast meat that she can provide them with. But if *the gravy* drips, as well as the fat, the meat will be spoiled and tasteless; that will be the fault of the fire and the cook.

There are two most important requisites for broiling—a clear brisk fire and a perfectly clean gridiron.

See that the fire is clear and brisk; sprinkle a little salt over it to ensure its being so, if any smoke appears. Make the bars of the gridiron hot, rub them with a little fat to prevent the meat sticking to them. Put your meat over the fire and turn it every three minutes. It will be done in about eight or ten minutes, according to its thickness.

Then have ready a very hot plate, on which the meat should be placed, sprinkle over it a little salt and pepper, and, if you can afford it, a little piece of butter, about as large as a thimble; then cover the whole close with another hot plate, and keep it hot till you serve it, which should be as soon as possible. For broiling nicely, you should have a double gridiron, which will allow you to place the meat in the middle and turn it over altogether without pricking it with a fork. When you purchase a gridiron it should be quite bright, and it should always be kept bright. How loathsome is meat served with marks of black grease streaked across it!

Questions.

What is roasting?
What appliances are necessary for the work?
What joints are usually roasted?
Which are usually boiled?
Give me a receipt for roasting six pounds of loin of mutton?
What is broiling?
How would you broil a mutton chop?
What are the principal requisites for broiling?
What must be guarded against in roasting, in boiling, and in broiling meat, with regard to its looking nice?

CHAPTER XXI.

FOOD—HOW TO COOK IT. No. 3.

If I were fanciful or nice,
 What she prepared must tempt me;
Only to watch her at her work,
 An appetite would give me.
There was not found in high-born dame,
 More delicate refinement;
More healthful looks (she sought no fame),
 Or more complete contentment.
Yes, all among bright pots and pans,
 A-cooking in the kitchen,
I found my queen, of all the queens,
 My fairy so bewitching.

WE have yet to notice several other methods of preparing food.

Stewing. Of all the methods of preparing food, stewing is the best adapted to the necessities of the poor. Odds and ends, tough and rough pieces, trimmings, etc., which would not be suitable for any other method of dressing, may be turned into delicious dishes, by being properly stewed. Stewing is the cooking of meat by a very slow process, in a small quantity of water, either with or without vegetables.

The meat to be stewed must be carefully washed in cold water, and cut into small pieces; it should then be placed in a jar, having a close fitting lid, with just enough water to cover it; then add an onion or two, a little seasoning, and any other vegetables required to complete the dish. When all is in, the lid must be put on, and not removed till the stew is served. The jar should be placed in a saucepan large enough to allow a fair supply of water to surround it. This water must be kept boiling, and by its heat the stew will be very gradually and gently cooked.

Stewing may be done in a saucepan only, but it then requires more attention. It will have to be stirred and shaken to prevent burning, and it must be watched that it does not boil hard, or the meat will be tough, and when the lid is removed, so that it may be stirred, some of the nutritive essence will escape. With a jar, placed in a saucepan, in which water is boiling, it requires no further attention than to keep up the supply of this water; it can stand on the hob, and the more gently it is cooked the better. It is well to put a stew to the fire soon enough to allow it at least four or five hours' cooking, and for this cause it should be prepared the day before it is wanted. It can remain by the fire all day without wasting or spoiling.

The appliances for stewing are a stone jar, with a close-fitting lid, and a saucepan that will hold it nicely, and allow plenty of room for the water to surround it.

Frying. Frying is cooking food in boiling fat. Many people would tell us that "frying is cooking food in a flat pan over the fire;" this is not so. You may fry things in a fish kettle, a saucepan, or anything else, providing only the vessel contains enough boiling fat to cover the thing to be fried.

If things could be fried in water, it would be much better than fat or oil; they would be sweeter and less greasy; but water can never be made hot enough to fry in. When water reaches a temperature of 212° it boils and throws off steam; this prevents it getting any hotter: and to *fry* nicely, a temperature of 380° to 500° is required. Oil or fat does not boil till it has reached 500°. Boiling fat is more than twice as hot as boiling water. You know how much worse a scald from hot fat is, than one from hot water.

The heat of fat for frying should be regulated by a thermometer; it is impossible to guess when it is hot enough.

The principal things to be cooked by frying are fish, cutlets, vegetables for stews, fritters, and omelettes. Here is a table, published by the National Cookery School, shewing the temperature required for various things to be fried:

Soles	380°	Cutlets ...	385°
Rissoles ...	385°	Fritters ...	385°
Whitebait ...	400°		

Cutlets and fish are brushed over with the white of an egg and covered with fine bread crumbs; they are then dropped into the hot fat; they become brown all over very quickly, if the right temperature has been attained, and they may then be set aside and allowed to cook more slowly. *The frys* should be of a beautiful golden brown colour, crisp and short, and should be well drained from fat on a piece of blotting paper.

The same frying fat may be used a great many times over, until it is brown or discoloured; but the fat in which fish has once been fried can never be used for anything but fish afterwards.

Nothing can be more hard or indigestible than meats prepared in the usual way in a fryingpan. The pan is placed on the fire, with a little fat in it, and the steak, or chop, or cutlet, is put into it often before the fat is melted; if it sticks to the pan it burns, and comes to the table almost as hard and tasteless as leather.

Bad managers patronize this mode of cooking, because it needs neither skill, knowledge, or forethought. They may dawdle, or gossip away their time, till just a little while before the meal should be on the table, and then they hurry "to clap a bit of something in the pan," and it is ready in no time. When we remember that health, good temper, and happiness, as well as money are wasted by such doings, we cannot help feeling sorry that such people should have a home to look after or a dinner to cook.

It should be borne in mind that all meats fried in fat are not so digestible as those prepared in any other way; the additional fat is no advantage, and it is difficult not to harden the albumen all through, by the high temperature to which it is subjected.

A great improvement on the old-fashioned fryingpan, is the frying-kettle, fitted with a wire basket. These kettles vary in size; a convenient one would be about five inches deep and nine or ten inches across, and the wire basket has two handles, and is of nearly the same size. When the fat in the kettle is hot enough, the basket containing the meat, fish, etc., is let down into it, and as soon as it is done, the whole can be lifted out together, and put to drain. After being thoroughly drained, the fish may be removed with a slice, and served on a very hot dish.

Baking. Baking is the cooking of food in an oven. After what has been said about regulating the heat, it will be at once seen that it is not well ever to bake meats. It is not possible, with an oven of common construction, to raise or lower the temperature according to your wish. For instance, it is necessary to secure a good brisk heat in your oven *at first:* this you may manage; but when your case of albumen is set, how are you to reduce that temperature? and in the mean time your albumen is becoming hard all through.

It is said that in France they have ovens so constructed that they can either raise or lower the temperature according to the thermometer, and that this causes their bread, etc., to be so much better and lighter universally than English bread. Another reason why an oven is not suitable for cooking meat is the necessity of the *basting* the joint. If the oven door is often opened it reduces the heat, and it must be often opened if the joint is to be basted enough.

In cottage homes, it is usual to see a small range, with an oven on one side, and an ironing stove on the other. By drawing out a damper, the heat of the fire is allowed to pass under the oven, and make it hot, but they do not always "act well," simply because you are at the mercy of the *draught* or *the fire.*

Experience and clever management will lessen the difficulty to a great extent, and then the oven may be made useful for warming up remains of dishes or baking puddings.

The oven for baking bread should be made of brick and heated with a wood fire, lighted inside. It will be a great boon when every home is provided with this advantage, because of the superiority of home-made bread.

In some parts of the country all cottage homes are provided with such an oven; it is built out from the kitchen with an opening usually at one side of the fire-place, and which is closed by an iron lid.

Wood for heating these ovens is sold by *the cord.* A cord of wood is a stack which should measure 2½ yards long, and 2½ feet high, while every stick should be 2½ feet long. The wood consists of the sawn-up limbs of oak, pear, or elm trees. Oak is the best; it burns longer, and "*has more heart in it;*" but then it is always dearer than the other sorts. A cord of wood can be purchased from 5/6 to 12/6, according to its quality, and the thickness of the sticks. *Small stuff* is the cheapest, because it burns out so quickly.

Questions.

What are the principal methods of preparing food?
What are the chief advantages of stewing meat?
What appliances are most desirable?
What is frying?
Which joints are most suitable for roasting, boiling, stewing, and frying?
Why are baked meats objectionable?
What is the best use to make of an oven?
How are bread ovens heated?
Why is wood preferable to coal?

CHAPTER XXII.

FOOD—HOW TO EAT IT.

Cloth so white and shining ware,
Glittering, sparkling, here and there ;
Not one *make shift* to be seen,
Mother's board's her pride, I ween.
Slops and creases—things awry,
Nothing could more vex her eye ;
Frugal, spare perhaps, but neat,
Mother's board looks very sweet.
Brush you locks, and shine your face,
We're the flowers her board to grace ;
Nothing rough and rude must grate,
We're the silver, family plate.
None more courteous must she see,
Than her own dear treasures—*we* ;
Herbs the dinner—love the sauce,
Smiles and kisses second course.
  Hurrah for mother ! dear, darling mother !
The best home queen, that e'er was seen ;
    Hurrah for mother !

AFTER all the care and trouble possible has been bestowed upon the food and its preparation, it yet remains for it to be made available to our needs—it must be eaten.

The daintiest meal ever provided would be of no use to a muzzled dog, would it?

The Boy and the Cheese. There was a poor little boy once, who was brought up by a miserly old grandfather, so the story says. The child was fed almost entirely on dry bread, and the old man himself also, with the addition of a morsel of cheese. To be able to eat cheese was the tip-top of the little man's desire; and, at last, he ventured to petition that he might have "*just a look of the cheese*" too.

The grandfather promised to consider the matter, and the boy was in high glee.

At the next meal the ancient schemer presented his grandson with a bottle closely sealed. "Here, my child," said he, "is a bottle containing cheese enough for a school of boys; but lest you should be extravagant I have sealed the cork in, and you must not remove it. When you dine, rub your bread on *the outside* of the bottle, and that will impart to it a flavour equal to a great many looks."

Eating Food. Now the food we eat may become to us just like the cheese in the bottle, unless we understand not only the right way to mix it, the right way to purchase it, the right way to cook it, but also the right way to eat it.

"Of course every one knows how to eat," you say. Well, perhaps they do; but we will say a few words about *the right way* nevertheless.

First, then, we must eat slowly.

The glands must have time to do their work. Those in the mouth, or the salivary glands, have a good deal of important business to attend to. They act chiefly on all the warmth-giving or starchy foods. They have to turn the starch into sugar to render it soluble, to moisten and reduce the substance of the food, while the teeth pulp it. And the more perfectly the mastication is carried out by the teeth, so much the more complete is the work of the salivary glands.

These facts are universally forgotten. People come to their meals *in a hurry*, they pop their food into their mouth in large pieces, turn it round a time or two, and then *down it goes* "with a most uncommon bolt."

There are no more ill-used organs in the world than our poor stomachs. The food should enter their precincts nicely reduced, well masticated and moistened: instead thereof it comes tumbling in much in the same condition as it was when it lay on the plate!

Talk about the taskmasters of Egypt being hard sort of fellows, when they required bricks and withheld straw! Why they were kind-hearted refined gentlemen compared to the taskmasters who lord it over these stomachs of ours. "Go to," say they, "here are bricks, make food thereof, and get lusty and strong, that thou mayest work yet harder."

The habit of thus bolting the food is very common among children, and they have not even the excuse of urgent business.

Digestion begins with Mastication.

Remember, it would be no more absurd to expect a man to make a table with a needle and thread, than it is to expect the whole work of digestion to be done by the stomach—one of the most delicate organs we possess. *Meals must not be taken hurriedly.* Let every one whose business it is to manage the home, set their faces against the habit. If time cannot be found at any one hour to partake comfortably of a good meal, then alter the hour till it can be done, and only take *a little snack* to prevent sinking and faintness.

Working-men are usually allowed an hour for their dinner. This would afford them ample time for a good meal and a rest also, if it was all to be appropriated in this way. But the reverse is the case: they often live at some distance from their place of work, and the best part of the time is spent in hurrying to and from their homes.

Results of Bad Management. And then if the home manager happens to be *a fryingpan manager*, no wonder the poor fellows suffer; "they get flatulence;" "their food lies heavy on their chest;" "they suffer such pain after meals," and so on. And the next thing is that *they are compelled*—mind, I say *compelled*, for they cannot suffer and work, to take a sup of this thing or that, which they find gives them temporary relief, and in time become regular dram-drinkers. Oh, what a mill-stone about the neck is bad management!

Principal Meal after Business Hours. The rich find *they* cannot enjoy or digest their food in the middle of their business. Why should the poor be compelled to do so? *They* have a hearty breakfast, a light luncheon, and a good dinner *when their work is done.* Why should not every working man's wife adopt the same plan, and prepare for her husband's mid-day meal some light tempting little snack to be eaten cold, either in his home, or in his shop, while he enjoys his rest, and a look at the paper, may be?

The agricultural labourers work hard; their breakfasts are bread and *nought*, multiplied twenty times if you like; or bread and a little fat bacon, dinner the same, and on this they go from six to six.

But then their suppers as soon as they get home! the great dishes piled up with potatoes and *garden stuff*, and crowned with *the rasher*, or the *buckets full* of vegetable soup, with such flavouring as they can procure. *You* might wonder what was going to be done with it all, but *they* can solve the problem without the slightest difficulty.

And yet one of these men, on being asked the meaning of the word "*digestion*," said, "It's a disease as a gentleman dies of when he tumbles off his horse when he's hunting."

Happy home managers—plan everything—try everything—alter everything—till you secure to your household restful, quiet, enjoyable meal times; without this, the cheese in the bottle was a better feast, than anything you can provide for them.

Second. We must eat with a quiet mind.

The Mind the Ruler of the Body.

The ruler and controller of the whole body is the mind, whose imperial home is *the brain.* This brain is safely encased in the bones of the skull, and is continually working the telegraphic wires which bear messages to every part of its kingdom. These wires are called *nerves.*

The nerves branch out from the brain, and from the spinal cord, which is attached to the brain, to every internal and external part of the body. So minute are they that as many as 3000 of them are found on one square inch of surface.

Directly any sensation is communicated to any one of our senses, that same sensation is sent twanging along the nerves till it reaches the brain, and they receiving messages in return, convey them throughout the body, and eye, or voice, or hand, or leg, are all set in motion as the case may require.

A little child sits smiling on its mother's lap; its eye sees, or its ear hears, something which displeases it; instantly the smile disappears, the face puckers, the tears flow, the voice yells, and perhaps the tiny hand and foot deal blows and kicks to the offending object. The nerves of the eye or the ear conveyed the sensation to the brain; instantly the mass of telegraphic communication was set going, and eye, and voice, and hand, and foot obeyed the various messages received.

There is no part of the body more quickly affected by the various sensations communicated, than are the different glands. A sudden fright or panic, and the saliva refuses to flow; "my throat and mouth felt like leather;" "my tongue clave to the roof of my mouth," are common expressions.

Under pressure of anxiety or affliction, the desire for food, or *the appetite* seems to leave us, and the various juices necessary to digestion seem dried up. If food is then forced upon the stomach, it causes pain and uneasiness; often the stomach refuses to retain it at all; and this because all the organs show their sympathy with the part distressed.

Anything which upsets the mind destroys the effect of nutritious food; a fit of passion or ill temper, a fright, nervousness, too much head work, anxiety, and trouble, are all likely to hinder the appropriation of the nourishment which the food provides for us; it will be like the cheese in the bottle, very little good will be obtained from it.

Thirdly. We must eat with moderation.

Temperance a necessity.

We are not sugar barrels or beer casks, you know, made to hold as much as can possibly be crammed into us. Only swine are allowed to dispose of as much as they can cram down; but they feed to get fat; we feed that we may live, enjoy, and work. A certain quantity only is necessary, or *is enough;* more than enough is far worse than insufficiency.

And moderation or temperance in our eating and drinking means far more than leaving off before we are compelled to do so. There are some things of which we are particularly fond, and there is a danger that in the use of them, at least, we may be intemperate and need to exercise self-control.

Our palate may crave things hot, or cold, or sweet, or sour, or lean, or fat. Remember that every excess does harm; the more simple and regularly you live, the more likely you are to be, "healthy, wealthy, and wise."

And it is a remarkable fact that excessive indulgence in any one thing creates a dislike to it. Children have been cured of excessive fondness for any particular dish, by being compelled to eat it till the stomach refused to receive any more. It is cruel to carry out such a plan, and more harm is likely to be done than was intended. The better way is to let the mighty mind be taught to regulate and control, rule and restrict, not only the temper and affections, but also the appetite and desires.

Fourthly. We must eat with delicacy and order.

Refinement at Table.

There is a great deal more in the custom of "dressing for dinner" than we sometimes think. Every one ought *to dress for dinner.* No matter where the home may be, the hands should be nicely washed, the clothes brushed down, and every little tumbled shock-head be fetched into order before appearing at table. All round the board each should be looking and behaving their best; aye, and they should *feel* they are looking their best too.

Nothing puts us in a better temper with ourselves than this feeling, and nothing makes us in a better temper with other people. So if we come to table feeling good-tempered and gracious, knowing that we are just meeting to enjoy such food as our means will allow us to partake of, how it ought to do away with all selfishness and rudeness.

Then we shall be as careful of our neighbour's wants as we are of our own; then we shall attend to all such little matters of decorum and propriety, as the right handling of the knife and fork, the proper way of passing things, and the absence of indelicacy, awkwardness, or roughness.

We shall be content patiently to wait, or smile, or listen, and all brawling and noise will be banished.

And the setting and arrangements of the table will be a great object. Care will be taken that every needful thing for use is supplied. Better go without an artificial flower than a salt spoon. Provide everything demanded by good manners and refinement; enforce the use of them by your example, and the olive branches round about the table will be good-mannered and refined also.

Happy-home managers, let me remind you once again, if you allow the inmates of your household to come to a disorderly table, in a disorderly manner, you may just as well cork your cheese up in a bottle: no one will get any real benefit from it.

Questions.

What is the first requisite to *eating well?*
What glands are first called into action?
How does *haste* hinder their work?
In what way does this affect the stomach?
Who suffer most from hurried meals?
How may this be prevented?
What evil does it often lead to?
How does the mind act upon the organs of digestion?
Why should we not force ourselves to eat when the mind is *upset?*
In what ways are we to show moderation or temperance?
Why should every one attend to their appearance before coming to table?
Give me as many rules as you know respecting behaviour at meal times.

CHAPTER XXIV.

FOOD—DINNERS, LITTLE AND NICE.

A Meal—what is it? just enough of food
To renovate and well refresh the frame,
So that the spirits lighten and the strength renewed,
Turn with glad willingness to work again.
A Feast—what is it? only too oft a load
Of things unneeded, laid on organs slight,
Which burden energy and weight the mind,
And keep us sluggish, grumbling, morn and night.

WE have said a good deal about *food*, but our subject will be incomplete if we leave off without a few hints as to the way these remarks of ours may be put into practice. So now we are going in this one chapter to discuss some nice little dinners.

Nice—that is, nourishing and enjoyable.

Little—not great and costly, but just such meals as happy-home managers will need to prepare day after day.

Cookery Books. There are cookery books enough abroad in the land, which give every detail for dinners, grand and splendid; dinners with course after course, of things in season and out of season; dinners about which, "What is the cost?" never is and (we hope) never need be, asked. We are not going to entrench on the province of such books as these.

And there are cookery books also which instruct you how to manage *nicely* on from 50/- to 100/- per week; which tell you what joints to choose, what soups to provide, what vegetables to buy, and what delicious little puddings to make. In short, which give you every information as to the way to secure nice changes of good food, even on such small means as these. Well, we are not going to entrench on the province of these books either.

All those whose incomes enable them to live on all they desire, regardless of cost, and all those who may have *to manage* a little so that they may do the same, go to these cookery books; they are many and they are excellent. The dinners here will not suit them. They will be nice, certainly, but they will be *little dinners*, not plentiful or gorgeous feasts.

Bearing in mind that the more simply and regularly we live, the healthier will be our bodies, and the more jolly our temper and spirits, we will go to work.

Nice little Dinners. Our dinners must consist of a mixed diet. We must have flesh-formers, warmth-givers, and also mineral food.

The flesh-formers are albumen, gluten, caseine.

The warmth-givers are starchy foods, sugar, and fat.

The mineral foods are vegetables, salt, water, etc.

Albumen is the flesh-former found in meat; it is the most readily digested and appropriated; but still, for all that, *it is the one we can best do without.* You must not be surprised, therefore, if in the concoction of our nice little dinners, we say next to nothing about flesh foods.

Foods containing *albumen* are expensive, and are not really deserving the important place they have so long occupied in our bills of fare. The English nation have such an obstinate preference for meat, that they eat more than any other nation under the sun, and they get the notion that no dinner can be a dinner, unless *meat* forms the principal item.

Now there are some people who trace many of our national diseases to this constant use of flesh. Certainly *a little* is a good thing; hard workers and great thinkers need food which can be used up by the body quickly; albumen is the best for this. If the meat was healthy, if the meat was properly prepared, if the meat was properly eaten, and a few more "*ifs*" beside; then to a body whose energies have run down like a clock and want winding up quickly, a little tender juicy meat yields them more nourishment in less compass than any other flesh-forming food.

But we must remember the use of it is not imperative. All we need is the proper supply of the various foods to meet the requirements of the body, and it should be a matter of thankfulness to us that if we cannot procure the one kind, a substitute that we can procure is ready to hand. The lighter the food which nourishes us, the lighter and more buoyant our spirits, the clearer our brain, and the better our temper.

Prejudice must be overcome. As happy-home managers we must not shut our eyes to the fact that here will be a difficulty to overcome—the difficulty of *prejudice.* It is quite possible for a man to sit down to a meal rich in nourishment, and yet because he sees no meat in it, to fancy he has not been fed at all. Once let every one be enlightened as to the actual properties contained in the food they eat, and this prejudice will vanish, for prejudice is only the result of ignorance. It must be our work to convince those we cater for, what a long time the English people have been making a mistake as regards actual nourishing food.

Here is a table drawn out by Dr. Lankester to show what proportion of actual flesh-forming food is contained in each pound weight of the things compared:—

	GLUTEN.		CASEINE.		ALBUMEN.	
	OZS.	GRS.	OZS.	GRS.	OZS.	GRS.
Wheat...........	2	21	...	...	...	126
Barley...........	2	22	...	...	...	...
Oats	2	316	...	...	...	...
Rice...............	1	17	...	...	...	...
Rye...............	1	318	...	...	...	213
Maize	1	402	...	...	...	...
Beans	...	...	3	368	...	...
Peas	...	...	3	324	...	...
Lentils...........	...	...	4	70	...	...
Buckwheat......	1	165	...	...	...	...
Potatoes.........	0	100	...	...	...	...

The remainder of the pound in weight is made up of starch and water.

Flesh-forming Foods. You will see that wheat, barley, and oats are richest in gluten; but that the quantity of caseine in peas, beans, and lentils enables them to render us a still larger supply of flesh-forming food.

But there is, as we said before, something against caseine as a flesh-forming food; it is not easily digested, that is, persons of impaired or weak digestion cannot appropriate all the nourishment contained in it. A man who works constantly in the open air finds no inconvenience from constantly making his mid-day meal of bread and hard cheese, and his dinner of a dish of peas or beans, with a little fat bacon or pork; but a clerk, who sits closely to his desk all day, or a hard-working sempstress, would not derive the same benefit from it. Caseine, as we also said before, is rendered easier of digestion by the addition of fat; hence we hear commonly of bacon and peas, pork and beans, etc. Of course we should very soon discover whether this or that particular dish disagreed with us, and then we should be wise to avoid taxing our stomachs with the same again.

When the English gentry go to reside at the south of France or in Italy, it is a common thing for them to put aside all their national heavy dishes, and to live only on bread and fruit, or maccaroni and grapes, and they almost universally declare themselves to be "so much better" for the change of diet; and yet, when they return to their own country, they at once fall into their old ways and customs.

Millions on millions of our fellow-creatures thrive and flourish, who never taste flesh food. The gluten of wheat gives them their necessary supply, and they dislike and abominate, as much as we value, animal food.

The Staff of Life. There is no question that wheat and its preparations is our most valuable food. It is universally used as bread, in which form it is essentially our staff of life. Then maccaroni and vermicelli are both preparations of the same valuable grain, and form the staple food of many southern European countries.

So much then for the store closet from which we are to draw our supplies for our nice little dinners.

Soups. One of the most advantageous ways of presenting comforting nourishing meals, is in the form of soups. Our French neighbours, who are the best cooks in the world, are great in the art of soup-making. They make soup of almost everything.

A gentleman and his family were once obliged to spend Christmas in France; but they determined not to go without their plum-pudding. The mamma wrote out carefully the receipt—so many eggs, so much bread crumbs, suet, raisins, currants, peel, etc. All to be well mixed with so much milk, and well boiled in about three quarts of water. Their French cook perfectly understood the receipt, but when the dish was served, imagine their dismay to find it was a soup tureen full of strange-looking stuff. Mamma had forgotten to say, "*tie it up in a cloth.*" So all the ingredients had been tipped into three quarts of water!

Although we should not, perhaps, have admired that sort of soup, let us say a little of some that are really estimable.

The basis of all good soup should be *the stock* from which it is made.

The stock may consist of the gravy in which any quantity of meat has been stewed, or it may be the liquor in which a joint has been boiled, or only the liquor into which has been extracted all the goodness to be found in scraps, odds and ends, etc.

We have nothing to do with rich soups; setting aside the expense, they are not the kind of food likely to improve our digestion; and, besides, we intend to add the nourishment *to* our stock, so we shall not need to find it there all ready for use. The simpler kinds of stock will suit our purpose admirably well.

Let every good home manager have *a stock pot.* At least one day in the week let her place this by the side of the fire. Let her put into it two or three quarts of water, an onion or two, a carrot, turnip, parsnip, and any other vegetable at her command. Then let her add *her savings;* pieces of bacon rind, bones of cold meat, crusts of bread, or any article of food which needs *doing up.* If she has no bones, it will be worth her while to purchase a few pennies-worth, and thus she will gratify our national taste for meat flavouring. Let her season with pepper and salt and cover the whole up close, and simmer it gently *the* *whole day.* Then she must strain it through a colander, and when it is cold, remove from it every particle of fat, and she will have "stock" ready to form the foundation of a delicious soup.

Moreover, let her only once try the difference in the soup made from such stock and some made from clear water only, and she will never again grudge the trouble, but will value the stock-pot as it ought to be valued.

Mr. Buckmaster, the great cookery reformer, says:—

> "We never allow our children to take the bones in their fingers, and after dinner we separate the fat, break up the bones, with any fragments of meat, skin, or gristle, that have not been blackened by cooking, and with a few fresh bones, we always have a little fair stock prepared from materials which many persons would give to dogs or throw into the dust bin."

Odds and ends, in the shape of the cuttings and trimmings from meat, can always be purchased at a butcher's for the purpose of enriching or flavouring stock, if the bill of fare for the week does not yield sufficient without this plan.

Now with such stock as this for a basis, we will learn how to make our first little dinner of delicious *Tapioca Soup.*

Tapioca Soup. Take two quarts of stock, *perfectly free from fat*, bring it to a boil; then sprinkle into it, stirring all the while, four ounces of tapioca; let it boil gently for twenty minutes, with frequent stirring; add to it a teaspoonful of sugar, a tablespoonful of catsup, a piece of butter as large as a walnut, and half a teacupful of milk, let it simmer about five minutes; then remove the saucepan to your table to cool, placing it on an old plate or a piece of paper. Beat up two eggs nicely, and when the soup has cooled for five minutes, stir the eggs in thoroughly and serve. If your soup is too hot the eggs will curdle; it should be smooth like cream.

This soup, properly made, is delicious, and about five pints can be procured for eightpence.

Material to make stock	4d.
4 ozs. tapioca, at 4d. per lb.	1d.
Two eggs	2d.
Catsup, sugar, butter, and milk ...	1d.
	8d.

In your stock and in your eggs, you provide *albumen.*

In your tapioca, you provide *starch.*

In your vegetables, you provide *mineral food.*

And your catsup, butter, milk, and sugar, provide—what?

You may use rice or sago instead of tapioca to make this soup, if you wish for change; or, better still, maccaroni or vermicelli; both the latter ingredients need soaking in warm water for about twenty minutes, before adding to the soup, and must be boiled for forty instead of twenty minutes. As they are both preparations of wheat, they contain more flesh-forming substance in the gluten, and therefore more nourishment.

Green Pea Soup. Boil three pints of green peas till they are tender, and pass them through a colander or coarse sieve. Boil up about five pints of stock, and stir in the mashed peas; add the same seasoning as for tapioca soup, keep it well stirred, and serve hot.

In this soup your stock and peas supply flesh-forming food in albumen and caseine. Your peas and butter warmth-giving food. Your water and vegetables, mineral food. The cost of the three quarts would be about 7d.

Vegetable Soup. Clean and pare six potatoes, two carrots, four onions, two turnips, and half a stick of celery. Cut them into small pieces, and put them into a saucepan, with a quarter of a pound of butter or dripping, stir them briskly over a clear fire for ten minutes, then add a good teaspoonful of flour, and a pint of milk, keep it stirred till it boils up, season to taste, and rub it through a sieve or colander. Boil two quarts of stock, and put in the pulped vegetables, and let it simmer for an hour. Serve with fried or toasted bread.

Here your flesh-forming food is provided in the stock, the milk, the bread, and flour. The warmth-giving in the fat and starch. The mineral in the vegetables.

Lentil Soup. (Mr. Buckmaster's receipt). Take a three-quart saucepan and put into it two quarts of warm water, half-a-pint of lentils, one onion, with two cloves stuck into it, a small bunch of herbs, and two ounces of butter. Let them come to a boil, and simmer for two hours. Add two ounces of pearl barley, and a pound of spinach, blanched or scalded, and chopped up. Let all boil together till well cooked, and season with pepper and salt.

As the soup is thick it needs much stirring, but it is exceedingly nourishing.

Haricot Bean Soup. (The same.) Boil a pint of haricot beans; when half done strain off the water, and set them on with fresh boiling water enough to cover them well; add an onion stuck with two cloves, half-a-pound of good bacon, and black pepper and salt to taste. Let the whole boil together till the beans are well cooked.

Haricot beans require nearly three hours, and should be previously soaked.

Here you have good nourishing soups to make dinners for a week. Remember that haricot beans, peas, barley, rice, sago, tapioca, always need washing before using. Put them into warm water (not hot), and the refuse and bad grains will float: remove all rubbish and drain. It is best to soak peas, beans, and lentils all night before using, as it accelerates the cooking, unless you are sure such vegetables are young, when it will be unnecessary.

Questions.

What are the advantages derived from simple regular living?
What objections are made against the constant use of flesh foods?
Can we always protect ourselves against diseased meat?
How are we able to do without it altogether?
What are the chief advantages and disadvantages as to its use?
What is the origin of prejudice?
Which grains furnish us with most flesh-forming food?
When is the use of caseine objectionable?
Which is the most nourishing way of preparing food?
What is stock?
How may useful every-day stock be prepared?
Give a receipt for one cheap good soup.

" Whys," which need a " Because."

Why are *skill*, *knowledge*, and *experience* needed by a market woman?
Why are *guessing* cooks likely to be bad cooks?
Why should a kitchen be furnished with proper tools?
Why must all meat be subjected to a great heat at first?
Why should good home-managers patronize stews?
Why should food be eaten *slowly, with a quiet mind, moderately, and in perfect order?*

CHAPTER XXV.

FOOD—RECEIPTS.

You must not go and say "*it will do*" and "*never mind,*"
For no single item must be changed, you'll find;
Those who make receipts for your guidance are exact,
Proving what's the right thing with wisdom and with tact.
When you work hap-hazard—no guide or control,
All your *items* may be good, and yet spoilt *your whole.*
If you use receipts at all, make the dish the same,
Or set up *your* cookery book, in another name.

YOU must bear in mind the rhyme which heads this chapter in all your practical experiments. In all made dishes, such as stews and soups, the various ingredient sought to be so well proportioned, that no one flavour will predominate, and no one will be able to detect anything you have put into them. Everything used will so blend as to produce one pleasant flavour, utterly different to either of the original ones. Therefore, after a good cook has spent endless pains to secure this end, it would be a great pity to spoil it all by a little carelessness; and it is quite possible to use the same things in the same quantities, and yet to put them together in such a way that the maker of the receipt would not know the dish again, if asked to taste it.

Especially take all pains to ensure the most delicate cleanliness in all your preparations. Spare no trouble in washings, scrapings, and parings; "*the more the pains, the greater the gains,*" is true in cookery as in everything else.

This chapter is to contain a few more receipts for nice and inexpensive dishes, gathered from various sources for your benefit.

Australian Meat Stew. (Mr. Buckmaster.) Stew six onions in two ounces of dripping or butter till thoroughly done. Cut the meat across the grain into slices, about half-an-inch in thickness. Divide the onions into two parts, and put the one half into a clean fryingpan, season with pepper and salt, and lay on the slices of meat. Pour over the meat a teaspoonful of catsup, or any sauce you prefer. Place the remaining onions on the top, put a saucepan lid over the whole, and gently warm the meat through by standing it in the oven. Serve with potatoes or other vegetables.

Stewed Lentils and Bacon. Soak half-a-pint of lentils in cold water for three hours, put them into a saucepan with plenty of cold water, and let them boil for half-an-hour. Strain them through a colander, and return them to the saucepan, and cover them, if possible, with the water in which barley has been boiled. Add an onion, with three cloves, and bunch of herbs. Scrape and trim a pound of bacon or salt pork, put it into the saucepan with the lentils, and let them simmer till they are thoroughly done. Season with pepper and salt and a little chopped parsley. Turn the lentils on a dish, place the bacon on the top and serve. Haricot beans will do as well as lentils.

Stewed Sheep's Head. Procure a sheep's head, wash it thoroughly, remove the brains and let them soak in cold water. Stew the head gently for three hours, in three quarts of water; then remove the head, cut off all the meat, and return it to the broth, and put the bones aside for the stock pot. Now chop the brains and add them, with two chopped onions, a thinly-sliced carrot, and a turnip, a bunch of parsley and a little sugar, pepper and salt. Let it boil gently another hour.

Eggs and Cheese. Take two ounces of grated cheese, and mix it with four well-beaten eggs; add an ounce of butter, broken in little bits, and a little pepper. Put the mixture into a lined saucepan, and stir with a wooden spoon, over a clear fire, till nicely hot and thick. The mixture must on no account be allowed to boil, or the eggs will curdle. Serve on hot toast at once.

Maccaroni and Cheese. Take half-a-pound of maccaroni, wipe it in a clean cloth, and plunge it into plenty of boiling water to which some salt has been added. Let it boil twenty minutes, then drain it in a colander. Have ready grated two ounces of cheese. Butter a dish, place in it a layer of maccaroni, break over it a few little pieces of butter, and sprinkle it well with grated cheese, and season with pepper and salt. Repeat this till the dish is full, and bake in a Dutch oven before the fire. When the top is a nice brown, serve in the same dish.

Salt Cod Fish. Procure two pounds of salt cod, well soak it in cold water, and then separate the flakes. Boil a pint of milk, thicken it with two teaspoonsful of flour, and add to it an ounce of butter, and a bunch of chopped parsley with a little pepper. When this sauce is well mixed, add the flakes of fish, and let it simmer for twenty minutes. Serve it very hot with potatoes.

Mackerel and Fresh Herrings. When they are in season these fish may be purchased very cheap, and may be prepared in various ways; none of them, however, preferable to the following:—

Procure two nice fresh fish, well clean them, cut them open, and dry them on a cloth. Place them in a Dutch oven, and dredge them well with flour; break over them two ounces of butter, and season with pepper and salt. Let them bake before a brisk fire for ten minutes, turn them, dredge them on the fresh side, and bake them another ten minutes. Remove them to a hot dish with a slice, or they will break.

Boiled Mackerel. Thoroughly clean the fish and place it in a kettle, cover it with cold water and plenty of salt. Bring it slowly to a boil, skim it, and let it simmer till it is done. Serve with plain melted butter or fennel sauce.

When fish is done, the eyes start, and the skin rises up. An ounce of salt to every quart of water is not too much for fresh fish.

American Dish. Take two pounds of lean beef, cut into small pieces, a quarter of a pound of bacon, two pounds of mealy potatoes, three ounces of rice, two carrots, turnips, and onions, thinly sliced, a leek, and cabbage. Fry the meat, cabbage, and onions, in a little dripping, and put them, with the carrots, into a gallon of water over a slow fire to stew gently for three hours. Boil the potatoes, mash them, and add them with the turnips and rice, about half-an-hour before serving. Season with pepper and salt.

Toad in the Hole. Get about two pounds of meat trimmings, or scrag of mutton, wash it nicely in cold water, and cut it into pieces, and put it into a baking dish, with pepper and salt. Make a batter of three tablespoonsful of flour, a pint-and-a-half of milk, and one well-beaten egg. Pour the batter over the meat and bake for two hours.

Oatmeal Pudding. Soak a pint of oatmeal in a quart of hot milk all one night. Add to it two ounces of chopped suet or dripping, and two well-beaten eggs. Mix well and tie lightly in a floured cloth, and boil for two hours and serve hot. It can be eaten with treacle, sugar, or salt.

Apple Charlotte. Cut some slices of bread and butter; peel core, and slice some apples. Butter a dish and put in the bread and butter in layers. Over each layer of apples grate a little lemon peel, squeeze a little lemon juice, and sprinkle a little sugar. Fill the dish full, cover the top neatly with the apple parings to prevent it burning, and bake in a quick oven for an hour-and-a-half. Turn the pudding out when done, sift a little sugar over, and serve hot.

Hodge Podge. Procure about a pound of cold mutton (underdone is best), two lettuces, one pint of green peas, five or six green onions, two ounces of butter, pepper and salt, half-a-teacupful of water. Mince the mutton, cut up the lettuces and onions in slices. Put these in a stewpan with all the ingredients, except the peas, and let them simmer gently for three-quarters of an hour, keeping them well stirred. Boil the peas separately, mix all together, and serve very hot.

Hodge Podge. (Mr. Buckmaster). Procure a scrag of mutton, turnips, carrots, green peas, cauliflower, onions, stock. Grate rather coarsely two young carrots, and slice three carrots, three turnips, and three onions. Shred one lettuce and a bunch of parsley, altogether say a quart. Take a pint of green peas, when shelled, and the sprigs of a cauliflower. Put aside half the peas in a basin. Have ready, in a clean four-quart stewpan, three pints of broth or stock, put in all the vegetables, except the peas in the basin. Cut your mutton into cutlets and put them also in the stewpan. Let the contents come to a boil slowly, then add two ounces of pearl barley, previously blanched in a little water or stock, and simmer till the meat is ready. Skim and season with white pepper and a small teaspoonful of pounded loaf sugar. Boil the remaining peas separately and add them just before serving. Hodge podge should be thick and the vegetables should be young.

Stewed Rabbit. (The same). Cut up a young rabbit into small joints and put them aside. Take a quarter of a pound of streaky bacon and cut it into small pieces. Melt in a clean stewpan an ounce and a half of butter or sweet dripping; add the bacon, and when lightly fried add the pieces of rabbit, and fry to a nice brown, constantly stirring the whole with a wooden spoon; now add a tablespoonful of flour, work it well in, and add, at short intervals, a little water or stock, till the whole is just covered, season with pepper and salt and a small piece of lemon peel. Skim and simmer slowly, and add a dozen button onions and six mushrooms (if you have them) previously blanched. When the rabbit is done take it out and arrange it on a dish, boil up the sauce and pour it over.

Breast of Veal and Rice or Peas. Procure three or four pounds of breast of veal and cut it into pieces after removing the bone, cover it well with water or stock and bring it to a boil. Add a bunch of sweet herbs, half-a-teaspoonful of pepper and a teaspoonful of salt, and a tablespoonful of lemon juice. Let it simmer gently for two hours, adding a little more water when necessary, then add to it a teacupful of rice, previously washed, or a pint of green peas, boil for half-an-hour, and serve.

Tripe and Onions. Procure three pounds of good thick tripe, wash it well in cold water and trim off the fat, dry it well on a clean cloth, put it into a clean saucepan, and cover it well with some milk or milk and water; let it boil very gently for two hours, and stir it frequently to keep it from burning or sticking. Boil about eight large onions till tender, then chop them small, and add them to the tripe with pepper and salt, and a teaspoonful of pounded loaf-sugar.

Make a little thickening with two teaspoonsful of flour and a little milk, and stir it into the saucepan about ten minutes before serving.

Tripe. (Mr. Buckmaster). Tripe may be boiled in plain water, and served with onion sauce and mustard, or it may be boiled in real stock with fresh beef bones, or baked in milk and served with onion sauce, or after it is boiled, it may be dipped in batter and fried for five minutes in butter with finely chopped eschalots. Fried tripe should be a golden brown colour.

You must remember that where you can procure good sweet skimmed milk for a penny or twopence a quart, there is nothing better to make a meal for children. Milk, thickened with some meal, is full of nourishment, and you may depend upon it, there is no food you can supply to them which will be equally suitable. Luxuries and dainties, which are bad for any of us, are especially bad for children.

The most nutritious of the meals with which milk may be thickened are oatmeal and the preparations of wheat. We know, at the present time, a family of eight children, who were brought up as simply and plainly as possible, chiefly on milk and grain, and a sturdier, heartier set of boys and girls are not to be met with. Their breakfast was oatmeal porridge and milk; their dinner, five days out of six, thickened milk or milk puddings and fruit; and their tea, bread and butter, or plain cake and milk. Their mother tells me they never catch cold, are never bilious, and are always hearty and ready, while their rosy cheeks and round plump legs are a credit to the sensible way in which their parents bring them up.

Let us try a few of their receipts for nice little dinners for the young ones.

Rice, Sago, Maccaroni, Vermicelli, or Maccaroni Milk. Boil a quart or three pints of milk, according to the number to be supplied. Wash about a quarter of a pound of rice, or other thickening, and add it to the milk. The milk should be boiling when it is put in, and should be occasionally stirred to keep it from burning. It should boil twenty minutes. Sweeten to taste, and serve with stewed apples or rhubarb, or any other fruit in season.

Tapioca Cream. Wash two tablespoonsful of tapioca, and let it soak in cold water for two hours, put it to drain, and then well beat it up with a small teacupful of sugar. Boil a quart of milk and stir in the tapioca and sugar, let it boil a quarter of an hour. Set it to cool, and well beat up three eggs. When the milk is cool enough stir in the eggs gently, and add any flavouring preferred, and serve with preserves or stewed fruit.

Arrowroot, wheaten flour, corn flour, oatmeal, ground rice, or any other meal may be used instead of the tapioca, if preferred.

Cheese and Milk. Take half-a-pint of milk, boil it, and thicken it with one teaspoonful of corn flour, then stir in four ounces of grated cheese and an ounce of butter; let it simmer gently till quite smooth, with frequent stirring, cool it a little, and add to it two well-beaten eggs. This dish may either be spread on toasted bread, or browned in a dish before the fire.

Persian Pudding. Boil a quart of milk, add three tablespoonsful of washed rice, boil for twenty minutes. Take the pulp of ten baked apples and beat it up with two ounces of sugar and the whites of three eggs. Cool the rice milk a little, stir in the apples, etc., and flavour with a little grated lemon rind. Put the mixture in a dish and bake for half-an-hour. Boil a half pint of milk, sweeten with sugar, and flavour to taste; beat up the yolks of the eggs and add them to the milk, stir it till it begins to thicken. Turn the pudding out, pour the custard round and serve.

Furmety. Procure some whole wheat (new wheat if possible), boil it in milk till quite tender, or till it cracks open, serve with preserves, stewed fruit or sugar.

Count Rumford. About 120 years ago a gentleman was born in America, who devoted the best part of his life to the improvement of the food and the homes of the poor; we mean Count Rumford. After labouring a long time he received an appointment under the Bavarian Government and settled in Munich. He found the town over-run with beggars and the sufferings of the poor very great. He set about trying to better their condition. He began with his soldiers. He invented soups full of nourishment, composed of barley, peas, onions, potatoes, and cheese, or salt fish or meat. He broke bread into his soups just before they were eaten, and he found that his Bavarian soldiers could live comfortably, and were stout, strong, and hearty, at a cost of only twopence a day.

After this he purchased an estate and provided food for all the labourers employed on it; and here he carried his economy still further. Here is his recipe for soup for 1200 persons:

			s.	*d.*
70	lbs. barley	... ...	5	9½
65	lbs. peas ...	... ...	3	6
230	lbs. potatoes	... ...	2	0
70	lbs. cuttings of bread	...	10	0
18	lbs. salt ...	... ...	1	2
46	lbs. vinegar	... ...	1	6
982	lbs. water			
	Servants, fuel, &c.	...	3	6
1481	total weight.	Total cost £1	7	5½

According to this receipt a pound of nutritious food was procured for one farthing for each person.

Things were probably much cheaper then in Bavaria than they are in England now; yet we have accounts published in our own day which testify quite as effectually to the wonders to be effected by good management.

Cookery Schools. There have been established, in many places in our country, cooking kitchens in connection with the day schools. Mr. Buckmaster has written an account of what he found some of the girls doing in these schools, and it is specially interesting to hear how they go to market. Here is an extract from his report:

"Saturday Cookery School, in Soho, London. The instruction has been given by one of the teachers from the National Training School for Cookery. It begins with marketing. Some of the girls, accompanied by the teacher, purchase in Newport market, or from the costermongers, what is required for the day's cooking. There is the usual bargaining and criticism, so important in the choice and purchase of food, and the cost of everything is entered in a book. I regard this as a valuable part of school work. The following are copied from the book:

"'Went to market at 9.45 on Feb. 13, 1875. A rabbit 1/6, a sheep's head 10d., sheep's heart 5d., liver 9d., half a pig's head 1/-, bacon 10½d., odd pieces of meat 4½d., vegetables 8d., rice 1½d., currants 1½d., sugar 3½d., spice ½d., haricot beans 7d., potatoes 6d., bread 6d., milk 2½d. Total cost 8/9. On this date 20 persons dined.'

"'Went to market, Feb. 20, 1875, at 9.30. 2 lbs. of tripe, at 8d., 1/4, dripping 4d., two sheep's hearts 10d., giblets for pie 6d., onions 4d., pork for soup 3d., flour 2d., currants 1d., potatoes 8d., carrots, sage, and leeks 3d. Total cost 4/9. On this date, from these purchases 18 persons dined.

"'Went to market at 10 o'clock, Saturday morning, March 27, 1875. 6 lbs. Australian meat 3/-, ½ lb. butter 8d., eggs 1/-

milk 4d., potatoes 6d., parsley 1d., onions 3d., sugar 2d., currants and spice 3d., plums 2d., mustard ½d., salt 2½d., flour 2½d., bread 2½d. Total cost 7/1. On this date 21 persons dined.'

"On the return of the girls from marketing, the proposed methods for cooking are briefly explained, and each girl works from a plainly written recipe, while the teacher superintends the work. On the day of my visit the dinner consisted of a soup prepared with potatoes, leeks, sago, milk, and two quarts of water; stuffed mackerel, liver, and bacon; Irish stew; maccaroni pudding and gooseberry pudding. And to this dinner the girls, their teacher, the visitors, the vicar, and curates sat down in the kitchen. In many families one of these dishes would have constituted a meal."

Determination brings success. Now surely all these things may teach us a lesson. Still we are quite aware that we might go on multiplying receipts for simple cookery till we filled many books, and yet never make one good cook. This result must come from the effort and painstaking of those who are *determined* to make good managers; and when once this determination is awakened, success must follow. Each one will improve upon her own experiments day by day, as well as profit by the knowledge she gains from others. A new receipt, gathered from whatever source, the ingredients of which are within her means, will give her more satisfaction than she can express, and she will experience more pleasure in trying it and bringing it to perfection than she would gain from reading the most amusing book ever entered at Stationers' Hall.

Questions.

Why should you be careful to be guided by your recipe in cooking?
What is one very important essential in all your preparations?
Tell me of some ways of preparing Australian meat.
Give a good recipe for preparing salt cod-fish.

What is an apple charlotte?
How does Mr. Buckmaster advise us to make hodge podge?
What does he say about preparing tripe?
Which is the most nutritious of the grain plants?
Which is the best food for children?
What is furmety?
What were the principal ingredients in Count Rumford's soup?
Show how they met the requirements of the body.

CHAPTER XXVI.

CLOTHING—THE USE OF IT.

Keep cool—you cannot get too warm
In body or in temper,
But your best powers must work till they
Get rid of this *heat extra.*
And as each object, when it's hot,
Must heat the thing next to it;
So you may kindle tongues of flame,
And all too late may rue it.
Keep warm—in body and in mind,
For cold will cause stagnation;
Then none would burn with hearty zeal,
Or righteous indignation.
There must be fire without—within
Only the ruling spirit
Must always wield the power, to raise
Or lower the heat within it.

AFTER having gone over the subjects of the preceding chapters, we cannot be ignorant of the importance of putting the right sort of nourishment into the body. One sort of food must supply the daily waste and find actual substance to renew the strength and muscle or flesh.

Another must make bones, another must provide liquid, and another must supply warmth and force.

Internal Heat. So important is the keeping up of the internal heat of the body that the warmth-giving foods have a powerful external agent to aid them in their work, of which we shall now speak.

The heat of the body is a natural heat, kept up by the burning constantly going on within.

This internal heat is the same in all human beings all over the world. It is no greater in torrid climes, and no less in frozen regions. How do we know this? We discover the truth of this statement by the proper heat measure—*the thermometer.* If a thermometer be placed under the tongue, or arm-pit, of an inhabitant of either tropics or poles, it will be found that the natural heat of the body is the same in both places, about 98°.

The temperature round the body may rise considerably higher or fall considerably lower than this degree of heat. When the quicksilver in the thermometer falls as low as 32°, the temperature is at *freezing point;* when it rises to 212°, then it is at *boiling point.*

There are several kinds of thermometers, but the one in general use now is that invented by Fahrenheit, and called after him. When we say 60° Fahrenheit, we mean 60 degrees according to this thermometer.

Now in India the temperature often rises 100 degrees above freezing point, while in the Arctic regions it often falls nearly as many degrees below it. But no matter what the temperature which surrounds him may be, man must keep his internal heat the same all the world over; if he gets hotter he is in a fever; if he gets colder, his breathing and circulation suffer, and must in the end cease altogether. In what way are we to prevent the surrounding heat or cold from increasing or diminishing our necessary and natural heat?

We certainly need the power of keeping off superfluous cold, and of cooling down superfluous heat. What is this power?

First, then, as to the heat. You remember that we said, "water boils at 212°," and no amount of heat can raise to a higher temperature.

What then is boiling? *Boiling heat* is the highest degree of temperature to which any liquid can be brought by heat. Directly it reaches boiling point it begins to throw off steam or vapour, and not all the fires in the world will ever make that liquid any hotter.

You remember we said things to be fried needed more heat than things to be boiled, and that for this reason fat was used for frying and water for boiling, just because fat gets so much hotter before it throws off any of its heat. If water would rise to the same degree of temperature, it would, for many purposes, be preferable to fat. But it will never do so; directly it reaches 212° it boils, and you know some things to be fried require from 360° to nearly 500°.

The Body similar to Water. Now the body does pretty much the same as water. Heat to a certain point is necessary to it; directly there is any danger of getting beyond that, it throws off the superfluous heat by vapour or evaporation. Many things tend to increase the natural heat. *Exertion*—the faster a man works, or walks, or runs, the faster he breathes; the more oxygen he introduces by respiration and the more carbon is consumed. *Climate* also raises the temperature of the body, and other external heat. Well, directly, from whatever cause, the heat of the body gets beyond 98 degrees, the cooling-down process must begin; the body emits a vapour, or as we say, "begins to perspire."

Perspiration. Perspiration then is the vapour thrown off by the body to carry away or cool down all superfluous heat. It is made to serve also another purpose, of which we shall have afterwards to speak. Remember that the body has the power of regulating its own heat, and of cooling it down when, from external causes, it is likely to exceed the required degree. The vapour with which it bathes itself is called perspiration.

Cold. But what about the cold? as much harm may be done by the cold as by the heat. When persons are exposed for any length of time to cold, which lowers their natural temperature, they die.

Take two objects, one hot and one cold, and bring them into close contact, what happens? the cold object draws off to itself the heat of its neighbour, till they are both equally warm.

But if you keep changing the cold object for a fresh one, the warmth of the other is drawn off much more quickly, and it all the sooner becomes quite cold.

The atmosphere which surrounds us is constantly shifting and moving; if it be a cold atmosphere, and is allowed to come in contact with our bodies, it carries off our internal warmth much faster than the oxygen of the air and the carbon of our food can keep up the supply.

Therefore the body must provide itself with an external shield to keep off the cold, which would do it harm by robbing it of its warmth. This shield is the clothing we wear; the more intense the cold, the thicker must be our shield; layer on layer of close-woven thick material we need "to keep out the cold," or more properly speaking, "to keep in the warmth."

Wisdom of God in Creation. The infinite wisdom which made everything perfect, gave to animals clothing sufficient—the soft and silky hair, the warm close fur, the feathers and down to every animal—just such colour and texture as are best adapted to their wants. But then animals were made to inhabit one especial region. The wants of the arctic bear, wandering among the snows, is very different to that of the brown bear, whose dwelling is in milder districts. Man, on the other hand, was made to cover the face of the whole earth; he would be in the cold to-day, in the heat to-morrow; so instead of being furnished with perpetual clothing, growing on his body, he is giftted instead with the power of supplying himself, from all sources, with exactly that kind most suited to his present wants.

The Esquimaux. And there is no clothing more suited to his purpose, than that which he borrows from animals. Those who visit the country of the Esquimaux clothe themselves in the warmest furs and skins, turning the hair inside, and they are careful to leave no single part exposed that can be conveniently covered; and even then they charitably watch one another lest the frost should have seized any uncovered part. It is no uncommon thing for a person to lose the tip of his nose, or ears, or toes, or fingers, from this cause; for when once a part becomes frozen, it will break off like an icicle. The only plan is for some kind friend to try to restore warmth by friction; and it is said that though that warmth may depart without your knowledge, its restoration causes you agonies of pain.

Remember then that the use of clothing is to keep the outside cold from robbing you of your natural heat.

Clothing a Shield from Cold and Heat. But you will say, people wear clothing in hot countries, as well as in cold ones; and you are quite right, and in both places as a shield; but in one place it is to shield from the cold, and in the other from the heat. We use clothing in hot countries just for the same purpose that we use a fire screen or a parasol. When the external heat is so intense that it would burn or blister us, then we need to protect ourselves from that heat.

Questions.

What is remarkable about the internal heat of the body?
What is freezing point? What is boiling point?
Whose thermometer is now most commonly used?
Compare the heat of India and the Arctic regions.
What difficulty arises from these extremes in regard to the heat of the body?
How is this difficulty to be overcome in cold countries?
Why is not man furnished with necessary clothing like the animals?
What increases the heat of the body?
In what way is this superfluous heat cooled down?
How do we protect ourselves from cold?
Why do we need clothing in hot climates?

CHAPTER XXVII.

CLOTHING—HOW TO ADAPT IT.

The rightful adaptation of this or that,
How seldom does it form our theme of chat!
We find things so—we never question *why*,
Although in the *because* wisdom may lie.
Old customs had their object—not by guess
Your grandsires mixed their food or chose their dress;
We *smile superior*, these enlightened days,
Yet many A THING THEY TEACH US, to their praise.

HEAT is a wonderful power; wonderful alike in its sources and modes of action; the study of it and experiments concerning it furnish interesting occupation for many who have time and talents to devote to the subject. *We* have to look at it only as it concerns the health and well-being of our homes and ourselves.

The Reflection of Heat. Some colours and some fabrics will repel or reflect heat, others will absorb and conduct it. It will be necessary that we shall know something of these, as in our choice of clothing it will be our duty to adapt it to the climate and temperature in which it is to be worn.

It will not be wise to think *anything* will do to keep in the natural warmth. It will not do to fancy one thing is as good as another in guarding against cold. There are certain things best adapted for certain purposes in clothing, as well as in food, in fuel, in medicince; aye! as well as in everything else.

In hot countries and seasons we shall need that clothing which will best throw off from us the too great external heat, while at the same time it must be so little burden to us in every way that it shall not increase the inside temperature.

Smooth light-coloured fabrics have the power of reflecting or repelling heat; that is, they do not allow it to pass below their surface.

The Absorption of Heat. On the other hand, rough dark-coloured fabrics have the power of absorbing heat to themselves, and of readily conveying it to any object which may be nearest to them. A long while ago, Dr. Franklin, when the winter sun was shining on the pure white snow, took two pieces of cloth, one white and one black, and spread them on the ground. The piece of black cloth absorbed the sun's rays, and the snow speedily began to melt from the warmth drawn towards it; while the piece of white cloth repelled the sun's rays, or shielded the snow from the heat, and it remained frozen as before.

Another little experiment, which has often been tried, is this; take two coins, shillings or half-crowns, lay them in the sun, cover one with black and the other with white cloth, and try, in five minutes, which will be the hotter; or put on two gloves, one black and one white, and let the sun's rays fall upon them; you will soon see which one will draw the most heat.

Light and Dark Garments. In hot climates, therefore, the most suitable clothing is that which is made of light-coloured, thin fabrics. *Light-coloured*, because light and white things do not attract and absorb external heat; *thin*, because the body must not be burdened with weight, or anything which will raise its inside temperature.

The object of clothing is always to enable the body to keep its own natural degree of heat; this is best done in hot climates by that which defends it from heat; and in cold countries by that which protects it from cold.

When the body is likely to suffer from cold, rough dark fabrics should be worn outside, because they are best calculated to absorb and attract any external heat which may be made use of by the body.

White next the Skin. At the same time it must be remembered that dark clothing is not suitable for under-clothing; *then* it would absorb the heat of the body: it is not only for purposes of cleanliness that we wear white garments next our skin, we need something there that will not rob us of own heat, and, as a protection against cold, we place above our white under-clothing layer on layer of warm fabrics through which the cold shall not penetrate, and cover the whole with a garment rough and dark.

When our soldiers go to India, or lately, when men in England are much exposed to the hot summer sun, they cover their hats with a white scarf, thin in itself, and loosely twisted over the black; by this means they cause the sun's rays to be thrown back from them, and so avoid sun-stroke.

But you will ask, if it is true that white and light colours throw back or reflect heat, how is it that animals in the arctic regions are generally all white? Surely they need to attract all external heat.

White Animals. In countries where the animals are all white, as in the polar latitudes, the only existing heat is their own internal heat; if they were provided with dark heat-absorbing coats, that heat would be drawn from them, and passed into the ever-shifting outside freezing air. As it is they are provided with a thick casing of white fur, which keeps their heat closely packed within them to their own comfort and benefit.

But you will say again, if a dark colour draws heat towards it, why are the natives of the hottest countries furnished wlth a black skin? Surely they need to have the heat turned from them.

Bright tin and dull black Saucepans. This brings us to another view of the subject. Put a bright tin saucepan on one side the fire, and a dull black one on the other; which will give you the sharpest burn, if you touch it accidentally in a few minutes?

The bright one of course. The dull black one absorbs the heat and passes it through itself to the nearest object; the bright one repels or reflects the heat which, because it cannot pass through it, lays on its surface, and really makes it hotter to the touch than the dull one.

Fair Skins. Have you never heard that the fairer the skin the more it suffers from the sun? the more it tans and freckles and blisters? When white skins are exposed to the tropical sun they suffer intensely; they scorch and burn and blister, and lotions and salves without number are necessary to heal the soreness and discomfort occasioned by such exposure.

Black Skins. On the other hand, the black skin absorbing the external heat, passes it through itself. (Remember it does not absorb it to any great extent, for the skin is very thin.) Directly below the skin is a layer of fat, and the heat coming upon this fat, at once a natural salve is provided, which, pressing through the pores, softens and makes supple the black skin, which absorbed the heat that this end might be effected.

And again, you must remember that a black skin is best calculated to reduce internal heat by absorption in hot countries, while a white skin is best calculated to preserve the internal heat in cold or temperate ones, and the real object of all external covering has to do more with this natural temperature of the body than with any other temperature at all.

Hot and Cold Climates. In hot climates man wears that clothing and is provided with that skin which is best adapted to regulate his necessary warmth. The skin absorbs from the body any superfluous heat; the clothing should repel and throw back the same.

In cold and temperate regions the white skin keeps the heat within us, without absorbing it, and we put on such clothing as will from its nature draw towards us, and pass into us any heat which may benefit us. The greater heat would raise the natural temperature too high, the greater cold would reduce it too low; clothing shields us from the greater heat, clothing protects us from the greater cold. It does not make us warm—food does that; but it helps to keep us warm when we are warm, by protecting us from that which would bear our own warmth away.

There are some substances which part from the heat imparted to them much more readily than others. These are said to be good conductors of heat. Some of the worst heat conductors are the materials from which our clothing is made—wool, hair, fur, down, feathers, silk, cotton, linen, etc.

Flannel next the Skin. It is always a good thing in any climate to wear flannel next the skin. In cold climates, flannel being made of wool, is a bad conductor, and will keep warm when it has once been made warm. It should be *white* flannel, so as not to rob the body by absorbing the heat, and it should be *thick* flannel, so as to form a defence against cold.

In hot countries flannel should be worn next the skin, because, being a bad conductor of heat, it keeps warm, and does not fall cold against the skin as linen or cotton would do after being damp with perspiration. It should be thin flannel to allow the vapour of the perspiration readily to pass through it.

Of the evil effects of a chill on the skin, while the body is in a state of perspiration, we shall have to speak hereafter.

Light and Dark-Coloured Clothing. Now let us see what practical knowledge we have gained from all these facts to help us in our good management.

1st. Flannel should be worn next the skin in any climate, because it gives no chill to the skin during perspiration.

2nd. White or light-coloured inside garments should be worn next the skin, because they do not absorb the internal heat of the body.

3rd. In hot climates the clothing should be light-coloured, thin, and loose; *light in colour*, so as not to attract the sun's rays; *thin*, so as not to burden the body; loose, so as not to impede perspiration, or the passing off of vapour from the body.

4th. In cold climates the clothing should be thick woollen and dark-coloured on the outside; *thick*, to prevent the outside cold from penetrating it; woollen, because wool is a bad conductor of heat; and *dark-coloured* for the outside, because dark rough fabrics absorb heat. As the object of clothing is to help us to regulate our *internal* heat, and it is very seldom indeed, in our climate, that the outer air does not take from rather than add to our necessary temperature, white garments would be the warmest for us without and within. But we use dark ones also for convenience, and for purposes of cleanliness we say, though I see no reason why a black coat does not get quite as dirty as a white one; it does not *show* the dirt so plainly, perhaps.

Questions.

Which colours are best adapted to throw off or reflect heat?
Which will best absorb and attract it?
Why should *light*-coloured clothing be worn next the skin?
Why should dark colours not be worn?
What is the danger to the body in hot climates?
What is the danger in cold ones?
How are both dangers to be remedied?
Of what use are pugarees?
If white clothing is best suited for hot climates, why are animals in snowy countries clothed in white fur?
If dark outside clothing best draws heat towards us, why do the inhabitants of the torrid zone have black skins?
Which are the worst conductors of heat?
Why should flannel be worn next the skin in summer?
Why should it also be worn in winter?

CHAPTER XXVIII.

CLOTHING—THE SOURCE OF IT.

All things useful—beautiful,
  Silken, soft, and fair;
Skins and furs and tender plants
  Find us clothes to wear.
Sultry sun or freezing plain
  Yield us of their best;
Yield it too through death and pain,
  That we may be dressed.

WE have said previously that man is the only animal that is not naturally provided with all the clothing he needs, apart from any care or trouble of his own. And the reason for this is that he has to dwell in every climate, and often to pass, in a short space of time, from tropical luxuriance to frozen barrenness. Instead of a permanent covering, he has been endowed with wisdom to select for himself the most appropriate, and with skill enough to adapt his selection to his various needs.

Clothing from Animals, etc. There are very few materials used for clothing which come to us *first-hand;* they have nearly all served as clothing for some of the lower animals before. There is scarcely any animal which inhabits the earth, or bird which flies in the air, but is laid under tribute that we may be clothed. And not only do we study our necessities or comforts, we must needs be decorated also, so that if one living thing can afford us nothing useful, ten chances to one but we compel it to give us something ornamental; even the oyster must find us pearls and buttons, if we claim nothing else from it.

We obtain the materials for our clothing from both animal and vegetable substances. But although we do not now seek aid from it, the mineral kingdom has been made to yield us also some supplies for this purpose.

Cloth of Gold. Gold and silver, our most precious metals, as you know, are exceedingly ductile; that is, they are capable of being drawn out into threads finer than a hair without breaking, and though, of course, they form rather stiff and unmanageable fibre, they have at various times been woven into cloth.

This very costly fabric could not be very comfortable wear, and we only hear of it on state occasions. When Henry VIII., our splendour-loving king, was on the throne, a meeting was contrived between him and Francis I., king of France: here is Mrs. Markham's description of it.

"The projected meeting between Henry and Francis took place in June, 1520. Both monarchs arrived within the English pale, near Calais. The French king and his court took up their quarters at Ardres, and the English king was lodged in a magnificent palace at Guines. Two thousand eight hundred tents, many of them covered with silk and *cloth of gold*, were pitched in the surrounding plain; but even this number were insufficient for the multitudes who flocked to this splendid festival, and many ladies and persons of rank were glad to obtain a lodging in barns, and to sleep upon hay or straw. The French vied with the English in the splendour of their dresses, and this meeting is celebrated by the name of 'The Field of the Cloth of Gold.'"

Mineral Cloth. Besides the cloth made from the thread of gold and silver we hear of another curious mineral cloth.

There is found in most mountainous countries and in our own Anglesea and Scotland, a silvery-white mineral fibre, looking something like cobwebs, with the rime or hoar-frost on them. It is called *asbestos*, from a Greek word which means *inconsumable.* This fibre was woven into cloth by the old Romans, and made into table cloths, napkins, etc. Its most remarkable feature is that it will not burn away under the action of fire. Indeed, when it becomes soiled or greased, the best way of restoring its purity is to throw it into the fire, and leave it there awhile, and when it is removed it will be found to be cleansed, and of snowy whiteness.

The Romans, who patronized *cremation* long ago, used to wrap the bodies of their dead in asbestos cloth and burn them; the peculiar properties of the cloth preserved the valued ashes from contact with those of the fire, and they were easily removed from the shroud to an urn.

I daresay those managers who "don't like washing day," would be glad if this cloth were in general use now; but I am afraid the price of coal would be an obstacle to the general burning, leaving the price of the cloth out of the question.

But to return to the sources of clothing best known and most useful to ourselves, derived from animal and vegetable substances.

I. From animals we get wool, hair, fur, silk, and leather.

Wool. This is obtained from the sheep. It is of various qualities, according to the breed of sheep. The Merino sheep of Spain furnishes us with the finest; but English wool is always in great demand in the markets.

It would be difficult to number all the useful articles which are made of this material—cloths, flannel, baize, blankets, lindseys, tweeds, serges, and many others. Sometimes, for the sake of cheapness, the wool is mixed with cotton, in the formation of various fabrics; but these materials are not in any sense equal to those made from wool alone. They shrink from wet and do not wear as long.

Besides the fabrics already named we get stockings, carpets, and many articles for home comfort from the wool of the sheep.

Hair. Only those animals, whose hair is beautifully fine and soft, are robbed to furnish an extra fabric for our use. As hair is rarer than wool, so it is much more expensive. The animals from whom we borrow hair are the camel, whose soft silky covering is woven into *camlet;* the goats of Thibet and Cachmere, from whom we obtain *cachmere,* the beautiful fabric of which shawls are made; and the llamas of Peru, from whom we get llama cloth and alpacca.

Fur. It would be difficult to enumerate all the animals which provide us with fur. The most valuable are the sable, the marten, the ermine, and chinchilla; all these animals are not larger than a weasel or a rat, and a great number of skins are required to make one article of clothing. All furs are best when taken from the animals in winter, because the fur is then in its primest condition, being much thicker and longer than at other seasons.

The Sable is a small animal found in North America, Siberia, and other northern latitudes. Its coat is of a glossy brown, and is in great repute. The animal is trapped in the depth of winter. Any other method of catching it would injure its skin. The trappers suffer much in following their occupation, as they are much exposed and the cold is intense.

The Marten differs from the sable in having a black line of fur down its back, which is very handsome, and in being of a darker tawny brown. They are found almost exclusively in the Hudson's Bay territory and Canada.

The Ermine is white, with a little tuft of black on the tip of its tail. In summer the fur is yellow, but it turns white as the cold season commences. Real ermine is so valuable that it has for centuries furnished the trimming of royal robes, and has been considered as clothing only for kings and nobles.

The Chinchilla. This little animal is found in South America, and has a beautiful soft grey fur, which has something the appearance of feathers laid one over the other.

Common Fur. Besides these, the most valuable furs, there are the coarser or common ones; squirrel skins, rabbit skins, fox and bear skins, and many others, not excluding even cat and dog skins. The art of imitation has been brought to such perfection, that by dressing, dyeing, trimming, etc., it is difficult for inexperienced eyes to distinguish the real from the sham. Furs are a comfort and a luxury, and as far as their real use goes, the least expensive answer the same purpose as the more costly. It is a great comfort to us to remember that we may be perfectly hardy, healthy, and happy, without even having once been dressed in a fur garment.

Seal Skin. Of late years this fur has been in great demand, and numbers of animals are slaughtered to supply the markets. It is said that if the animal is skinned before it is quite dead, the skins have a richer more glossy appearance, and fetch a great deal more money. Let us hope this cruelty is not generally practised, or that ladies will soon give up wearing them altogether.

The seal is amphibious, and the fur is as impervious to wet as a duck's back, from which the water runs without penetrating. The seal is found among the icebergs of Greenland and Finland. It is so constantly in the water that men go out to hunt for it in boats, and often catch it in nets.

Silk. This beautiful material is obtained from a kind of caterpillar, which before entering its chrysalis state spins itself a cocoon, from a substance drawn from its own body, in the same manner in which a spider supplies material for its web. The flossy thread of silk of which this cocoon is formed is exceedingly fine, and is wound off directly the worm has finished its task. Silk-worms originally came from China, Italy, and the South of Spain, and so precious was silk that they jealously guarded their importation to any other country. At last some one hid a few eggs in a hollow cane and took them to Turkey, from whence they spread to other parts of Europe. At one time a robe of silk was considered worth more than its weight in gold. The silk-worm is fed upon chopped mulberry leaves, whole groves of which trees are planted in the silk-yielding countries for their especial use.

Leather. There is scarcely an animal we can mention whose skin or hide is not used to make leather, irrespective of their size or habits. It needs a thorough preparation before it is fit for use. The hair is removed by lime and scraping, and the skins are then laid in pits and covered with *tan*, or oak bark, and water. The longer the skins are left under the action of the tan, the more impervious they are to the effect of the weather, and the better they wear. At one time it was considered necessary to steep them for three or four years, but now they shorten the process by using a concentrated solution of bark, which is much stronger, and more powerful in its action than the bark strips. After the skins are removed from the pits they are oiled, stretched, made smooth, and dyed.

II. *The vegetable sources* of our clothing are chiefly the fibre we obtain from the flax plant and the cotton tree.

Flax. The flax plant is a delicate pretty little plant, having small leaves and a blue flower. It was once cultivated largely in Egypt, and that nation was famous for the beauty of its fine linen. It is now as largely cultivated in Ireland, and Irish linen forms one of the chief articles of Irish commerce. The fibre, from which we obtain the linen thread, is procured from the stalks of the plant. The seeds yield us linseed, and when crushed, linseed meal, linseed oil, and oil-cake for feeding cattle. The fibre is of a light brown colour, the same as the substance we know as *tow*, which is really the refuse from flax fibre, trimmed off in dressing. The fibre, after being twisted, spun, and woven, has to be bleached white; formerly this was done by the use of buttermilk and exposure to the rays of the sun; but now other means are employed. Flax is also cultivated in Russia and France and in some parts of Scotland.

The Cotton Tree. Though this tree originally came from the regions of the Andes, it is now most largely cultivated in the United States, and in the East and West Indies. The trees are kept cut down to about the height of four feet, for the convenience of picking, and hundreds and thousands of acres are devoted to their growth.

The plant has glossy leaves and white flowers; as the flowers fade, the seed-pod grows till it is about the size of a large walnut; when the seeds are quite ripe, these pods burst, and are found to be full of a snowy-white fluffy substance, in which the seeds lie concealed. As quickly as possible these pods are gathered before the hot sun's rays discolour the whiteness. The greatest labour of the preparation consists in separating the seeds; this used to be done by hand, but now a machine is used, which quickens the process. It is afterwards carded, and rolled, and spun, and woven, and bleached, and then sold as calico.

Hundreds of thousands of our fellow-creatures are employed in the cotton manufactures. The principal seats of the trade are Manchester, and the neighbouring towns.

These are the principal sources from which our clothing is obtained. We must remember that the fabrics made from these materials are innumerable. Silk and cotton, silk and wool, silk and hair, silk and linen, wool and cotton, wool and linen, and so on, are mixed, and each time the mixture receives a different name, and these mixtures are not always *adulterations* or impositions. Irish poplin, a beautiful fabric, sought after all over the world, expensive, rich, and durable, is made in Ireland, from a mixture of silk and wool. A mixture of cotton with either wool or silk deteriorates the usefulness of either; but wool and silk may be mixed without causing loss in value or utility.

Questions.

Why has man alone been left to provide clothing for himself?
From what sources does he derive his material?
What mineral cloths were formerly used?
What were their greatest disadvantages?
What animals yield us clothing material?
What is wool?
With what does wool supply us?
What do we procure from hair?
From what animals do we get hair?
Which are our most expensive furs?
In trying to secure warmth to others, what do the hunters most suffer from?
Why has the use of silk become so much more general than of old?
Give some account of flax.
Whence do we obtain cotton?
Are all mixed fabrics to be discarded?
What is Irish poplin?

CHAPTER XXIX.

CLOTHING—THE PURCHASE OF IT.

Make it a matter of business,
  When there are clothes to be bought;
The *texture*, the *price*, and the *how much*,
  Will need all your care and your thought.
Don't waste the time that's another's,
  Don't waste the time that's your own;
Don't try the temper and patience,
  By having a counterful shown.
Know your needs, state them, and get them,
  And don't be "*talked over*" to buy
Things that you know will not suit you,
  Hard though the shopman may try.

IT is said that all women have a weakness for *going a shopping*. An amusing story is told of the reason why a certain gentleman commenced keeping his carriage; this is it:—

Mr. Perkins met with a friend, whom he had not seen for a long time.

"Why, Perkins, my boy, how are you? I am glad to hear from all quarters that you are going on so swimmingly."

"Well, as to that, I am not sure that business has been quite so flourishing with me lately as it used to be."

"Indeed! why folks have been telling me that you had begun keeping your carriage."

"Oh, ah! yes; but that is only as a matter of economy."

"Matter of economy!" how do you make that out? I always thought a carriage caused a good deal of extra expense."

"Well, not in my case. You see I have a wife and four daughters, and dear creatures too. Of course they must take exercise in the open air. For years they walked out every day, and women like, they seldom came home without making some little purchase. This pretty thing, that useful item, or the other gem of art, proved too much for their powers of resistance, and I found the demand for *a little more money* came pretty frequent, and they certainly had the best of all the bargains. At last I presented them with a pretty little pony and carriage ; and now they take long drives into the country and study botany, and bring home wild flowers, and while they are healthier, you cannot think what a save it is to me."

There are a good many more people beside Mr. Perkins who would find, if they cared to reckon, that the aggregate of all the little unnecessaries they purchase, would be enough to pay for some good substantial comfort, which now they consider quite beyond their means.

Our good home-managers, however, are not likely to purchase, as the Perkins' ladies did, just for the pleasure of purchasing, though I am afraid a good many of them must plead guilty to the weakness before mentioned. Among the many *manias* that exist—monomania, dipsomania, kleptomania, etc., we certainly have some folks who are affected with shopping-mania.

They spend hours in the selection of a few simple articles which need only occupy them a few minutes, and give the shopman trouble to show them half the goods on the shelves before they can satisfy themselves. "Show me some more," is constantly their greedy cry, till the men often lose patience and temper.

We are not going to allow our good home-managers to be affected with any such a complaint as this through ignorance ; therefore we shall devote this chapter to the discussion of *the science of buying*, or hints, helps, and cautions to purchasers of clothing.

I. Hints. Never go to purchase clothing without having given the subject a good deal of thought. Settle in your own mind exactly the kind of thing you want, the quantity you want, and the price you can afford to give for it. Very bad managers are they who enter a shop with "I want *something* for so and so," and presently ask, "How much shall I need for so and so?" Of course if you leave the shopman to manage your business, he is quite likely to think most about forwarding his own, whether you lose by it or not. If you are not sure what really would best suit your purpose, then enquire among your friends who have had more experience, and profit by what they know.

When you have quite decided the kind of material you shall need, do not be tempted to look at a dozen or two different sorts that *you do not* need. Sometimes you will need to be firm as well as civil in making your wants known. In every shop there are sure to be goods that they are anxious to get rid of first, and if they can get you to take a share, so much the better for *their* purpose, whether the article suits *yours* or not. Here is an instance for you.

Mrs. White and the Shopman. Mrs. White wanted some dark wool serge to make her little Mary a dress. She had fixed upon wool serge, because she knew it would wear well and look well all the time it was wearing. Her sister had given her some black braid and buttons, with which she meant to trim it, and by having a plain skirt, with only braid trimmings, she felt she could make it at home, and Mary would get quite a nice-looking winter dress. She needed four yards and a half, and she did not expect to get it for less than 2/6 per yard. She entered the shop, and this is what followed :—

"I want about four yards of dark wool serge, for a little girl's dress."

"Certainly, ma'am; about four yards? I think we have some remnants about that length. I will shew you some."

And presently the man brings a pile of these remnants; some lustres, some lindseys, some cheques, and some merinos, but very, very few of wool serge. At length he displays a piece of tartan plaid—very pretty, very bright.

"This would make a beautiful dress for a little girl, and it's cheap too. We sell a quantity of this."

Mrs. White was attracted by the pretty plaid, and the picture of her little Mary in the dress, with the scarlet and blue and green peeping out from under her white pinafore, was a very pleasant picture in her mind, while *use* and *wear* faded away from it.

The shopman saw his advantage and followed it up. "We do not sell so many serges now for children, they are apt to hold the dust, or fray, or get rough; but plaids are very fashionable—only yesterday I sold a lady a large quantity of this same pattern; indeed, this remnant is all I have left. Six yards for 10/9."

He held it up and plaited it in folds, and displayed its beauties in every way, and Mrs. White was persuaded; she went without the article which she was quite certain would have been the best for her, and she purchased the one which was evidently the best for the shopman to sell, not for her interests but for his own.

And what was the consequence of this? First, Mary was rather vain, and inclined to be fond of dress. The plaid threw her into ecstacies, and with some coaxing and kissing she got the promise of flounces, which, as there was enough stuff, her mother did not hesitate to give her. Because of the extra work this entailed, and Mary's impatience to wear the beautiful frock, it was put out to be made, and of course had to be paid for.

When Mary went to church the next Sunday, was it any wonder that her little vain head was turned, or that she flirted her flounces, and held her head high, or that the seeds of vanity and love of display took such deep root, that many, many lessons and prayers will be needed to uproot them?

And then as to the frock itself, it did not wear well. Mary got caught in a shower the third time she wore it, and the colours ran one into the other, and it *cockled*, or puckered up, so that it looked shabby, and "like an old thing" in no time. And when the next winter came, and the frock came into every-day wear, Mrs. White often regretted not having bought the blue serge, which would have looked so nicely, while the plaid was limp and stained and faded; perhaps looking all the worse for the contrast to Mary's white pinafore.

Now Mary's aunt, who had given the braid and buttons, also determined to have a blue serge for her litttle daughter. This is what befel *her* shopping.

"I want about four yards of wool serge for a child's dress; can you shew me some?"

"Certainly, ma'am; here are some nice remnants that we can sell cheap; perhaps one of these would suit you."

"Thank you, I have decided upon serge; so I will not hinder you by looking at what I shall not purchase."

And the result was that Mary's aunt was speedily and civilly served with what she really needed. Her little Lucy was nicely and warmly clad for the winter, for nothing could have looked nicer when the braid and buttons were on. Then the next winter the dress was most suitable for every-day wear, and came in for a nice petticoat after that. And besides this, there were those whom Mrs. White was most anxious to please, *pastors and teachers*, who could not help wondering that Mrs. White dressed her little girl so smartly, and contrasted the appearance of the two children, and drew conclusions not in Mary's favour.

Time is money to a good manager. She does not want to waste her own nor the shopkeeper's. How much of this useful commodity would be saved if there was no shilly-shallying over goods spread on the counter, and if every-one went in and asked for such a quantity of such a material, at so much per yard, and refused to have anything to do with the things she did not want. If the goods cannot be got at one shop, they can at another, and no one is obliged to buy; they can always say, "Thank you, I am sorry you have none," and try somewhere else.

II. Helps. Make yourself acquainted with the signs of the quality of the various things used for clothing.

Calico should have an even selvage, be fine and close in woof and warp, without knots and flaws. Some cheap sorts are dressed over with a coating of lime; this can be detected by rubbing a corner, when the lime will fall off in powder.

Woollen Articles should be all wool; numbers of fabrics are made of a mixture of wool and cotton; this can be detected by fraying out a little piece: the wool will run across from selvage to selvage, and the cotton lengthways; the threads of cotton will have a smooth flat appearance.

Silk. A good black silk has generally a bright-coloured edge. Never buy glacé silks; they split with a few days' wear, and the cape or jacket becomes worthless. Silks are so got up now-a-days that it is very difficult to tell a good real article from an imitation.

Stockings are a very important article of dress. In every well-managed home they should be knitted. In knitted stockings the feet and legs are handsomely and warmly clad. Knitting is pleasant work, and can be taken up at any time, and mothers and daughters should be skilled in the use of the knitting pins. It is a good plan to have a knitting basket always handy, and it is astonishing how much may be done by taking up the knitting at odd moments, while watching the boiling of a saucepan, while hearing the little ones say their lessons, and at a hundred other times, without weariness or exertion, round after round may be done, and pair after pair of warm casings for feet and legs will be completed.

Boots and Shoes are always expensive articles; but it no economy to purchase the cheap ones. The feet must be kept warm and dry, or all sorts of evils will be the result; and cheap leather means improperly prepared leather, and will suck in the wet like a sponge. Boots which lace up the front are better than elastic spring boots, especially for children; indeed, on sanitary grounds, they are best for all. The elastic kicks to pieces and is no protection against bad weather, and when it must of necessity be replaced, it is an expensive piece of business.

It seems very hard to say so often to those whose means are so limited, "*do not buy cheap things*," when the alternative seems to be a cheap article or none at all. Good managers must forecaste; they will *cut* and *contrive*, and *mend* and *make do* for weeks, just to be able to add another shilling or two to the price of the article needed, so as to purchase one of better quality after all.

It is really of more consequence that the poor should be supplied with the best material, than that the rich should. Those who have money at their command can purchase as fast as a garment wears; but the poor cannot do this, they want clothing *to last*, and therefore they must have it of good quality. Buy everything as good as you possibly can; depend upon it, it is the only true economy.

III. Cautions. Be very suspicious of the "Amazing Bargains," advertised at the selling-off shops. We do not say that little odds and ends are never sold below their usual price at sales; but then if this is the case, it stands to reason that something must be sold at more than it is worth to make up for the deficiency, for the shopkeepers cannot afford to lose.

In some shops of respectability and long standing a sale is very often got up to get rid of the remains of the late season's stock; then it is a greater advantage to the owner to sell a little under its actual value, than to stow it away and run the risk of loss at last from change of fashion, damp, storage, moths, etc. But I think even in this case we may fairly argue, that they will not sell anything that will pay for keeping, and if you buy winter goods and hoard them all through the year, you are quite as likely to suffer damage as the shopkeeper.

Besides this, in going into selling-off shops, you are so often tempted to buy because things *seem so cheap*, and you think it will *come in for something*.

Ah! a good manager will have the actual positive necessities so constantly in her mind that she will have no room for the *fancies* or the *may be*. She will set her face against even the inspection of cheap drapery, as immovably as though she was the Egyptian sphinx.

She will know her shop, and she will not leave it for another, because she will have tried and proved that *there* she will be able to procure a fair article, at a fair price. And the proprietor of the shop will try to meet her wants and wishes in every way, because "she is one of our regular customers."

But you will say there are some shops where the goods are invariably marked at a lower price than at others. How can it be so?

The matter be may explained thus:—there are first-rate, second-rate, and third-rate manufactories of clothing fabrics. In the first-rate they buy the best raw material, employ the most skilled labour, and pay for the most efficient and expensive machinery; these turn out first-rate articles, without defect or flaw, and sell them to the first-rate shops.

The second-rate manufactories buy damaged raw material, and make the best they can of it: they hide the defects and flaws with all sorts of cunning devices and contrivances, so that it shall look as good as the very best; these goods are sold to the second-rate shops, and the proof of the pudding is not found out till it is eaten.

And then there are the third-rate or *shoddy factories*, where they buy up all the old and worn-out garments, tear them to pieces, twist the threads afresh, card them, weave them, and dye them all over again, and turn them out *spic and span new goods* once more. And these are sold to the third-rate shops, at a third-rate price, and that they wear in a third-rate manner a great many managers, who are not good, have found out to their cost.

We must remember that it is impossible for any shop to sell good things except at a good price. If we really mean to purchase good things, we must expect to have to pay a good price for them. We may not be able to purchase of the *very best*, but we will make up our minds, for economy's sake, that we will purchase the best we possibly can.

Questions.

What should be the first thing preparatory to going a shopping?

What may you reasonably suppose if a shopman presses something on you which you did not ask for?

Why should you decline to *look at these goods?*

How will you test calico?
How would you decide whether a woollen fabric was entire or mixed?
Which are the best kind of stockings both for wear and appearance?
What evils result from buying cheap boots and shoes?
Why should the poor have clothing made of good materials?
How will a good manager contrive so as to increase the value of her purchases?
Tell us some of the reasons for avoiding selling-off bargains.
Describe the articles in first-rate, second-rate, and third-rate shops.
What should be our resolution with regard to quality?

CHAPTER XXX.

CLOTHING—THE PREPARATION AND CARE OF IT.

> There's one accomplishment (we wish 'twere catching
> And every woman caught it,)—skill in patching.

THERE are many machines now-a-days — machines mighty and complicated, and which cost a little fortune in the purchase; but there are none which works more wonders or effects more changes than the little simple old-fashioned instrument, which has been used by good home managers from time immemorial—the bright brisk little needle.

Original Needles. In barbarous times the little tool seems to have been adapted from anything having a sharp point; for we read of thorns and fish-bones being used for the purpose. Steel needles were first introduced into England in the reign of Elizabeth; but they were all made abroad, and one needle in a family was considered a domestic treasure, and you may guess how carefully it was preserved.

Manufacture of Needles. At the present time the manufacturing of this little instrument finds employment for thousands of men, women, and children, in our own country. Redditch, in Worcestershire, has the principal needle factories.

There is scarcely anything more important than that our home managers should strive to become *clever at their needle.*

Sewing Machines. If we only know how to select and purchase clothing without having knowledge and skill sufficient to make it up, it will be a sad loss. In these days of sewing machines, people attach too little importance to skill in hand-sewing, forgetting that a machine can never equal the work of a trained hand.

Machines, rightly used, cause a great saving of time in long seams and close stitching; but the mending, the altering, the darning, and general repairing, which is really the most essential part of the business in a large family, can only be done by clever hands, and if a mother has to pay for this sort of work, it will make a sad hole in the income; and yet there are too many who have to do so, because they lack the requisite skill themselves.

Home Training. Our grandmothers certainly would not compliment us on our general proficiency in the art; in this, at least, they excelled us greatly. A girl was expected to commence learning to sew as soon as she learned anything, and it was this early application which so soon made them expert in the use of the needle. Queen Elizabeth is said to have completed a shirt for her brother, Edward VI., before she reached her sixth year, and the garment was pronounced beautifully made, and a marvellous piece of skill.

And not only is the art most necessary in a home, but it exercises a good moral influence there. Even when a family consists of boys only, "mother sewing in the evening," with all her children round her, now chatting with them or hearing their lessons, or listening as they read, will rest in the minds of her sons as a bright picture of home peace under her blessed influence, which will never leave them all their lives, and has filled the mind of many a wanderer with yearnings after home and good.

But where there are girls, the influence of needlework is indispensable. They will have to be keepers at home, and it is well for them if a good and wise mother shall train them to such skill in needlework that it may become a delight to them, and they will look forward to that time in the day when it shall occupy them with the greatest pleasure. When they are at work with mother, they will have no desire to find amusement or occupation elsewhere with questionable companions; they will preserve, amid home duties and pleasures, their greatest charm of modesty and refinement, and they will be saved from the temptations of the streets.

We know a family where there are three boys and three girls; the boys are all out at work, and each of the little sisters have a brother's clothes to take charge of. As naturally as possible you find them looking after "My Willy's socks," "My Eddie's buttons," and "My Franky's handkerchiefs;" and they seem to vie with each other that *their own boy's* clothes shall be better kept than any other boys' in the world; they look out ready for washing, and put away when washed every article, and seem to consider themselves responsible for their brothers in a manner touching to see; and their respective ages are 11, 12, and 13 years.

We intend to be *adepts* in everything which will make our future work beautiful and perfect, so we must endeavour to acquire such skill as will be necessary in this, as in all other things connected with good home management.

The principal stitches in plain needlework are—

Hemming. This consists of folding over twice the raw edge of the end or sides of the material and fastening them down to the main fabric. The stitch is made by taking two threads upon the needle and leaving two threads. In turning down a hem, the first fold should be half the width of the hem, except in muslin and fine work, when it should be quite the whole width.

Sewing. This is the stitch used in joining seams. Selvages are simply sewn over and over without turning down; but raw-edged seams need a fell. In seams, where strong work is unnecessary, running may take the place of sewing; but all new under-garments should have sewed seams. In making the stitch, if the needle is not pointed quite straight, or if you work round the end of your finger, the work will *pucker*, and one side will be shorter than the other.

Mantua Maker's Seam. This is made by placing the two sides of a seam together and turning down a double hem. It is useful for seams of jackets, or in other cases, where it is an advantage not to have any raw edges on the under side.

Patching should always be done with a sew and fell seam; threads should be drawn round the damaged place (if it be possible) and threads should be drawn round the patch to be set in; unless this precaution is taken, it may be uneven, and will be sure not to look well. The sew should always come on the right side and the fell underneath. The seam should be pressed or ironed perfectly flat, and great pains taken with the corners. In choosing a patch, if the article have any pattern, be particular to make it match in every way, and always tack the piece on before commencing to sew.

Stitching. This serves the double purpose of use and ornament. The fabric should be double, and a thread drawn on the upper side, where the line of stitching is needed. The stitch is formed by taking on the needle two threads both at the back and front of the cotton. Stitching should run the lengthways of the stuff or the selvage way, because the threads running in this direction are strongest and firmest, and will the better bear the strain in wear.

Button Holes should always be cut the selvage way for the same reason, and the stitch should be about five threads deep.

Gathering. It is a good rule to allow twice the length of the band for the gathers, and the stitch is made by taking up two threads and leaving four. The piece to be gathered should be halved and quartered, and a fresh thread taken at each of these points; then if the thread should break in drawing up, there is not so much work to do over again, and it is more easily and regularly fixed into its place. In striking down gathers, remember only *the gathers* need this arrangement at all. Some young people think striking down means making scratches to the extreme end of the fabric.

Herring-Bone Stitch. This stitch is used in fastening down the edges of flannels and such materials as thicken in the washing, when the double fold of a hem would become hard and objectionable. The work should be commenced at the opposite end to that at which other stitches are begun.

Cutting Out. Always secure a pattern of the size required, and make good use of your yard measure. It is well to have the pattern in paper and to pin all the various parts on to your material before commencing to cut; this will enable you to decide where you can most economically get out the different pieces. By a little thought and arrangement a good deal may be saved in the matter of quantity; it is so easy to waste a yard or two by neglecting to do this. The larger parts of the garment should be provided for first.

Patterns. When a good pattern of any article has once been secured, it should be preserved; but it should always be fitted on every time it is wanted, to allow for any little difference in size, which may have been caused by growth, etc. Be sure to have everything large enough; nothing can be expected to wear well that is tight, if the seams do not fray out they will look shabby in a very short space of time.

The Care of Clothing. When clothing has been purchased and made up, it must be taken care of. The greatest charm in the dress of any person is *its freshness;* it should be without crease from bad folding, spot from grease, or splash from mud. A tumbled, draggled dress of costly fabric will not look half so becoming as a clean smooth morning print. Garments for work, whether for men or women, should be made of material that will wash, and they should be regularly subjected to the process—there is no *freshener* like that; but when garments would be injured by soap and water, let them be well brushed day by day. If this is done when they are taken off, and nicely folded or hung up till they are required for wear again, they will look well twice as long as those which only get a brush when "I am ashamed to see them." Each of the little sisters, in the family spoken of in the previous chapter, are all queens of the clothes-brush, and hover over their own particular charge, ready to pounce upon any soil they have the power to remove, and which they feel reflect upon their own credit, or respectability, or neatness.

But the care of clothes includes the stitch in time also.

Every article, except stockings, should be looked over before it goes to the wash, lest the damage should be increased; not only should torn places be mended, but weak places strengthened, and buttons, hooks, etc., be replaced. It often causes a waste of time and sometimes a loss of temper, when an article of clothing is needed, and there is no fastening to it. As buttons are sometimes *ironed off*, it is well to look over shirts, etc., after the ironing is done.

If you have a set of articles of one kind, see that they are regularly worn; those which were washed last should be placed at the bottom of the pile, and not come up to the top till their right turn has come.

And there is yet one more thing to be said respecting the care of clothing. If we are to be particular to remove every spot or stain, we should be still more particular not to cause such spot or stain, and then there will be none to remove. Children who are trained to pick their way and walk cleanly will, to a great extent, avoid mud splashes; and those who have learned to *eat* cleanly, without slopping or crumbing, will have few grease spots.

And the same rule will apply to the elders also. It is wonderful what ordinary care will do. Two persons may be provided with exactly the same clothes, and subject them to the same wear and general use, and yet the suit of the one will look shabby and worn out, while the other will be quite respectable.

Fancy Work. Nothing has been said here with regard to the other kinds of work lately so much in vogue—

crocheting, tatting, and embroidery, because it is the least important. There is no reason whatever why garments should not be made pretty by trimming; but first of all the garment should be beautifully made, and then the fancy work intended for the trimming should be finished to match it. Generally speaking, in busy happy homes, every moment of time will be filled up, and the knitted stockings, the beautiful seam, the wonderful stitching, and the perfect little tucks, will be all that can be managed. And, depend upon it, there will be far more credit in a faultless darn than in the deepest edge of tatting that could be contrived.

Questions.

What were the ancient substitutes for needles?
When were steel needles introduced?
Where is the principal needle manufactory?
Why should home managers have skill with their needle?
In what indirect way has needlework an influence on boys?
In what direct way has it a great influence on girls?
When are machines especially useful?
How may we account for the greater skill acquired by our ancestors?
Which are the principal stitches in plain needlework?
What especial advantages are there in sewing, stitching, and herring-boning?
How should a patch be set in?
What will be necessary before commencing to cut out?
How should economy be studied?
What is the greatest charm in all clothing?
How may this freshness be continued?
What can you say of working clothes?
When should clothes be mended?
Why?
In what two ways should the care of clothing be shown?
What is said of fancy needlework?

CHAPTER XXXI.

CLOTHING—THE FASHION OF IT.

I cannot tell you what she wore,
Its style, its texture, colour ;
She seemed a perfect whole to me,
Just like a flower's sweet odour.
Was she in fashion? I don't know,
She seemed a combination
Of just such fashion, sweetness, grace,
As make true fascination.
She had no trailing skirts, I know,
She had no chignon ponderous ;
No panniers, and no tightened waist,
Yet the effect was wondrous.
Just a true woman—there she stood,
Modest and pure and loving ;
Looking so sensible—so good,
Could she be unbecoming?

ONE small chapter *only* about fashion ; and yet, for years on years, there have been weekly and monthly publications innumerable concerning this important matter alone, and still the subject seems as inexhaustible as ever. Neither does it seem that all the ground is yet occupied, for fresh books are springing up on all sides, each one advertised as "Compendiums of fashion."

Of course we have nothing to do with the subject as they render it, studying every shape and colour under the sun ; yet it becomes us to say something of it nevertheless.

Fashion means now everything connected with dress, its style, its shape, its texture, its colour, its width, its scantiness, its length, its shortness, and in fact, its anything. The most provoking thing about it is that as soon as you have got used to one fashion—it is fashion no longer. A change comes and something altogether different takes its place, and the change is generally as much as possible directly opposite to the one you have just begun to feel comfortable in. If bonnets are to-day worn reaching far over the face, next week you may expect to find them hanging down the back. If skirts are this season distended with crinoline, next season you may expect to find them narrow and tied down close to the figure.

And it has always been the same. Ages ago, if broad square toes were approved in one reign, long pointed ones were sure to supersede them in the next; waists up under the arms, were sure to give way to waists almost down to the knees.

It is a great misfortune to us as a nation, that we have no national costume. You have seen and admired pictures of Swiss girls, with their short skirt, square bodice, and white stomacher, and the hair drawn off from the face and hanging in one plait behind under the round flat hat; and yet the Swiss girl has no thought of improving upon it. She wears it in the same style her grandmother did, and is quite content with its suitability and its prettiness.

Ah! there is no doubt that those who have no change in their fashion can be far more economical, and are far less troubled about the matter of dress, than we are, who borrow from, and mix up every style found, all the world over.

Yet there is no doubt that we are compelled to pay some little attention to the matter. It has been said, and with a good deal of truth too, that no matter how ridiculous and absurd a fashion may be, after it has once become the fashion, a person who dresses in utter disregard of its requirements, looks far more ridiculous and absurd than the fashion is.

Avoid Extremes. Still we happy-home managers, who have something else to do and think of than following the fashion, may be thankful that it is not necessary that we should fall into extremes either way, while endeavouring to avoid making ourselves sights and absurdities.

It is a good plan to fix upon the style most becoming and healthful to ourselves, and then in a small way to adapt it to the style which seems most pleasant to other people. It is quite possible to pick *the prettiest* out of two or three modes, and so to combine them as to make ourselves look the very pink of neatness and nicety, and yet in no way *particular*.

If we are dressed neatly and in good taste, whether in our working or our very best dress, we shall always present a creditable appearance; the worst of it is that we are not careful enough to adapt our dress to our occupation, we seem to think anything will do for work. There is a great contrast between these two pictures.

A Scotch Fish Wife. Stout shoes, dark blue knitted stockings, well-fitting and without wrinkle; a blue serge skirt, scarcely reaching to the ankle; short loose jacket, bed-gown shape; a bright handkerchief, tied crossways over the snowy cap, the border of which sets closely round the clean shining healthy face, and another handkerchief tied loosely round the throat. And in winter the substantial plaid worn over the head and shoulders

An English Housewife. Elastic-side boots, worn over on one side, and with the elastic frayed out at the ankles; white cotton stockings, quite one day behind the wash; long flounced skirt, sweeping the ground, with perhaps one flounce ripped off by accident, and pinned on again for the purpose; an imitation Paisley shawl, faded, not with work or wear, but from being of a *bad constitution;* a black net or lace bonnet (which had been wetted and dried before its proper shape returned to it,) adorned with artificial flowers of most unnatural colour, shape, and magnificence, but now looking rather forlorn.

Certainly, in the latter picture, there is nothing inviting or picturesque, and yet we constantly see it paraded before us. The common every-day dress of working men's wives, in our large towns, has been much ridiculed. It generally consists of the spoiled and faded garments that have once been *best clothes.* When they were purchased, their suitability for the purposes of work was not considered, and therefore the result is pictured as above.

Neatness and Cleanliness. It is the duty of every woman to look as well as she possibly can at all times and seasons. Her appearance has quite as much to do with making the world beautiful as that of any flower in the garden.

She should be particular that all who see her, especially her own loved ones, should see in her nothing to offend the most refined taste. She will be perfectly neat and delicately clean, and there will never be seen about her person the faded remains of dirty or flimsy finery. She will look as well at her work on her busiest days as she does in her afternoon dress or her Sunday best. Her hair will always be smooth and glossy, and her face like the Scotch fish-wife's. "A bathing woman, in her blue serge, is as well dressed on the beach, as the duchess in her velvet and satin, being driven along the esplanade, because each are dressed suitably."

It is not wrong, then, for a woman to study what colour best suits her complexion, or what style is best adapted to her figure. She will have no vanity in the thought thus given to herself. She will not care if her appearance is never remarked upon by one of her family circle. She will be perfectly satisfied that her own pleasant brightness gets mingled and lost in the precious charm of *home;* but she will know surely that if this pleasant brightness were withdrawn, if she were to become slatternly or dirty, the charm would be all gone, and home would seem home no no longer.

Hints on Dressing. It will be well here if we study a few hints on dressing. Dresses should be made of quiet neutral colours, such as grey, brown, black, etc.; the brightening should come from some knot of ribbon or line of trimming. How much more ladylike is the appearance of one wearing a grey dress and bonnet, with a black jacket, relieved by some bright colour in the bonnet and round the throat, than that of one who displays upon her person all the colours of the rainbow.

Fair people should choose blue or mauve for their brightening colour. Dark people may wear rose colour, pink, or violet. Dark blue suits either complexion.

In choosing prints, stripes should be worn by short persons; dresses with patterns by those who are tall and slender. Large patterns are never pretty wear. Light-coloured dresses make a stout person look stouter.

Very many people fall into the mistake of thinking that if a style is generally worn it will suit *them*, and what they have admired upon a tall slender figure or long oval face, they strive to reproduce upon their own plump little form, or round, rosy, apple-looking face.

Study and care about dress is harmless, so long as our motive is to give pleasure to others; directly it gets beyond this, and we are gratifying our own vanity and love of display, it leads to mischief. How many souls and bodies have been ruined by this love of display! The poison of a serpent is not more subtle in its working than is this evil when once it is introduced into the heart. It leads the poor deluded victim constantly to strive *to appear to be what she is not;* and when once she considers this purpose to be effected, then she imitates the airs and graces, which she considers naturally belong to her improved appearance, and so by degrees she becomes a sham and imitation altogether.

To be thorough and real! Who can estimate the value of such a character in a young girl in the present day? She will present a perfect contrast to most of those who surround her. *Her laugh* will be her own; *her walk* will be her own; *her voice* will be her own. It will never have occurred to her to imitate this person or that person; she will be perfectly and naturally *herself.*

And she will avoid affectations and imitations in her dress as well as in her manner; a material will have no charm *to her* "because it looks like silk."

Her brooch may be only of ivory or jet; but it will be *real* ivory or jet. She will prefer it to the most gorgeous production of brass and glass, though it may *look like* gold and precious stones.

If her taste lead her to prefer a spray of jessamine or a bunch of daisies in her bonnet to a bow of ribbon, she will be careful that they are, as nearly as possible, pretty reproductions of the flower they pretend to be, and not a gaudy exaggeration; and she will know that where two or three flowers may be an ornament, yet *a load* or excess in any ornament turns out a common vulgarity.

Hats are certainly cheaper, more ladylike, and more becoming head-gear than bonnets. We know of nothing neater than *the some time* fashion of a small round mushroom-shaped hat, with its trimming of black velvet. But we only need to walk in a public street to see frightful distortions of even this simple covering. For elderly or middle-aged females hats are unsuitable, not only because they impart a rather jaunty appearance, but because they lack the protection to the face and ears which we grow to require as years go on.

Feathers are a beautiful ornament when they are real, but their price puts them out of the reach of those who have homes to manage and cater for, and we should no more think of adopting them for our own wear, than we should of coveting garments of gold thread. A great deal has been said against the wearing of humming birds as hat trimmings, because of the wholesale slaughter of these beautiful and delicate creatures, occasioned by the demand for their skins. The number which are destroyed seems almost fabulous, and if the demand is continued, it is feared they will be altogether exterminated. It seems grievous that such harmless beautiful things should be deprived of life simply that a hat may look gay!

Conclusion. And with this chapter we close the first part of the course marked out for us in our study of Domestic Economy. We have seen that the best of our time and talent and energy will be occupied with the work allotted to us; it is no babies' play—no common every-day affair—to become thoroughly good home managers. We have to use the key which will unlock the comforts for all amongst whom we dwell; and whether mothers, sisters, daughters or dependents, each of us are provided with such a key.

But it may be that some of us feel the work is too great for us, and the responsibility too heavy.

Remember it is not of our own seeking or appointing, and we cannot shirk it. "Shall not the Judge of all the earth do right?" In putting for us our work, did He not also especially endow us with such graces and qualities as would especially fit us for that work? Surely He did; and to us who really desire to do His will, to fill the glorious place of usefulness He has given to us, there will come a sense of joy and gladness that we may work His will in preparing a dinner, selecting a dress, or sweeping a room, quite as effectually and as much to His glory as the most eloquent preacher, or the greatest statesman in the House of Commons.

Let us ask Him for a large measure of that love which will not only lighten, but brighten and glorify all our labours.

Questions.

What makes fashion expensive?
Mention some of the absurdities of fashion.
What are the benefits of having a national costume?
Why are we obliged to pay some little attention to prevailing styles?
What plan is to be recommended?
Why should working clothes always be bought for that purpose alone?
Why should a woman take pains with her dress?
What colours are best for dresses?
How may dress be enlivened?
What colours best suit fair and dark people?
What evils result from love of display?

" *Whys which need a because.*"

Why do we need clothing at all?
Why are negroes provided with a black skin?
Why is linen to be preferred to cotton?
Why do good managers avoid selling-off shops?
Why is skill in hand-sewing to be preferred to knowledge of machine-work?
Why should a woman cultivate taste in dress?

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